

BUILT ENVIRONMENT PERFORMANCE PLAN (BEPP) 2015/16

First Draft November 2014

City Planning and Development Department

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INTRODUCTION

The City of Tshwane Draft BEPP 2015/2016 dated 03 November 2014 is submitted in line with the BEPP Guidance Note 2015/16-2017/18. It is hereby submitted that in terms of the Council Approved IDP Process Plan 2015/2016, a comprehensive BEPP 2015/2016 will be submitted once the draft Capital Budget has been finalised in January 2015. The Final Draft will be submitted together with the Draft IDP and Capex 15_16 to the Mayoral Committee during the period March-May 2015.

This submission provides the city's in context approach towards spatial targeting with primary focus on the movement system as the key spatial restructuring element of the built environment. Other built environment restructuring components will be incorporated in the next submission. The city is currently undertaking a scientific growth forecasting assignment commissioned by the CSIR, which will inform the formulation of the Tshwane Growth Management Perspective. As per BEPP Council Resolution May 2014, a capital investment planning system has been procured, which is a business planning tool ensuring quantitative, qualitative and spatial platform for formulating a developmental budget.

The Sections missing in this BEPP will be updated based on the CSIR Modelling as well as the capital investment planning system. Short, medium, and long-term investment areas, where spatial targeting is required will be one of the key outputs of both tools.

BACKGROUND

On 27 August 2013, the Council approved the Tshwane Vision 2055, a long term strategic plan through which the City seeks to improve the social, economic and management of the natural environment. The Tshwane Vision 2055 sets out the City's vision and long-term strategic agenda and the IDP outlines the priorities and key programmes for the Mayoral Term. Through these strategic documents, we seek to address the challenges of urbanisation and migration, economic development and job creation, service delivery, poverty, urban renewal and regeneration, globalisation, the need for information technology and the bridging of the digital divide and other related challenges. The identified outcomes of the Tshwane Vision 2055 are as follows:

The Vision has set six outcomes which need to be achieved over the next four decades. These are:

- Outcome 1: A resilient and resource efficient City
- Outcome 2: A growing economy that is inclusive, diversified and competitive
- Outcome 3: A City with quality infrastructure development that supports liveable communities
- Outcome 4: An equitable City that supports happiness, social cohesion, safety and healthy citizens
- Outcome 5: An African Capital City that promotes excellence and innovative governance solutions

- Outcome 6: South Africa's Capital with an activist citizenry that is engaging, aware of their rights and presents themselves as partners in tackling societal challenges

The long term vision of the City is as follows:

In 2055, Tshwane is liveable, resilient and inclusive whose citizens enjoy a high quality of life, have access to social, economic and enhanced political freedoms and where citizens are partners in the development of the African Capital City of excellence.

The above Vision and Outcomes are a basis on which future planning, infrastructure investment and resource allocation and collaboration will be premised upon as part of the complete Remaking of the Capital¹.

A1: LIST OF REF DOCUMENTS

1. SDF Planning Policy for TRT
2. IRPTN Land Use – Transport Integration Plan
3. Mayco Resolution 05 February 2014 ;Identified Investment Mechanisms to Incentivise development within the City of Tshwane (UDZ Report)
4. Informal settlement counts data
5. CoT spatial atlas (Demographics)
6. Draft Centurion Master Plan
7. Regional Spatial Planning trends analysis information

A 2: COUNCIL RESOLUTION

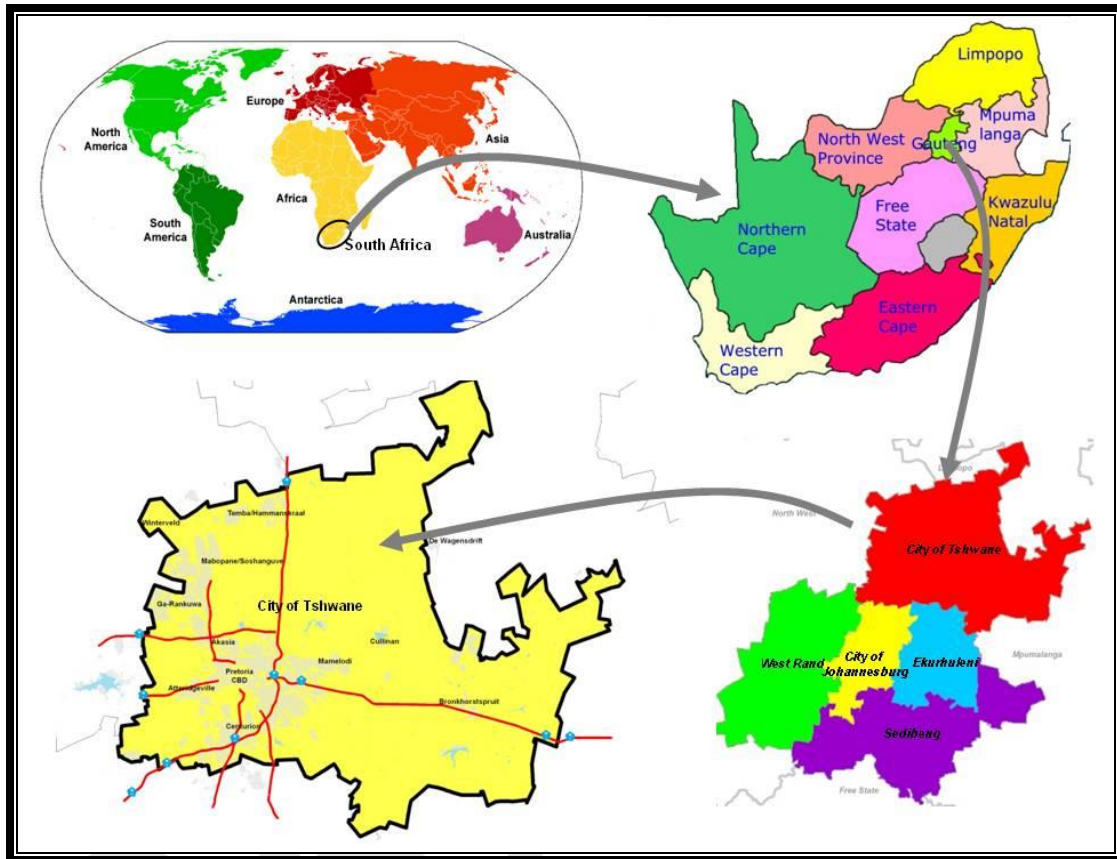
The Draft BEPP 2015/2016 will be presented to the Mayoral Committee and Council for adoption during May 2015 together with the Draft IDP 2015/16 Review, Draft 2015/16 SDBIP and the Draft 2015/18 MTREF.

¹ See Tshwane Vision 2055

B1: STRATEGIC REVIEW OF THE BUILT ENVIRONMENT

B1.1: LOCATIONAL CONTEXT

Tshwane's Geographical Context

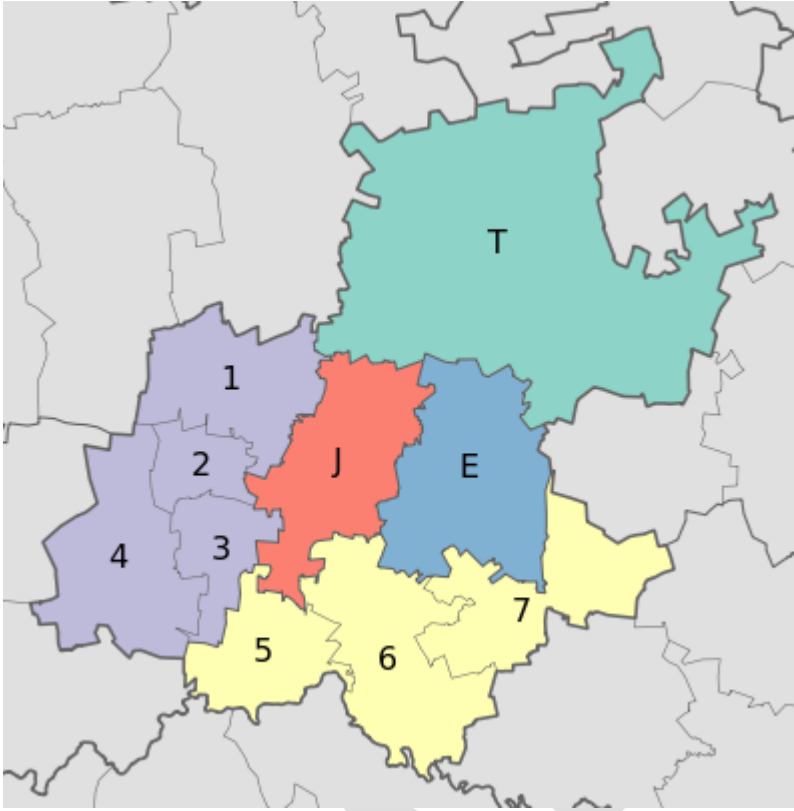


Map 1

International context

Tshwane is strategically situated as the northernmost influential city in the country. Tshwane is centrally positioned right on two major arteries in the southern African region. Stretching from the West to the East coasts of southern Africa, The Platinum corridor intersects with the North-South route that links Africa over its longitude from Cape Town to Cairo.²

² Tshwane Draft Spatial Atlas, 2014



Map 2

Map Key	Name	Magisterial Seat	Area	Population	Pop. Density
			(km ²)	(STATSSA 2011)	(per km ²)
J	City of Johannesburg Metropolitan Municipality	Johannesburg	1,645	4,434,827	2,695.9
T	City of Tshwane Metropolitan Municipality	Pretoria	6,345	2,921,488	460.4
E	Ekurhuleni Metropolitan Municipality	Germiston	1,924	3,178,470	1,652.0
5-7	Sedibeng District Municipality	Vereeniging	4,177	916,484	219.4
1-4	West Rand District Municipality	Randfontein	4,087	820,995	200.9

Table 1

Tshwane lies within the smallest of the country's nine provinces, Gauteng. Tshwane's neighbouring provinces are North West Province, Mpumalanga, the Free State and the Limpopo Province.

From a connectivity aspect it lies in the northern part of Gauteng, at the confluence of the **N1** and **N4** national roads.

It forms part of the Gauteng City Region situated north of Johannesburg and north-west of Ekurhuleni. This vast conurbation forms the economic powerhouse of South Africa and indeed of Africa. In terms of the Gauteng Spatial Development Framework (GSDF) the "Provincial Economic Core" is anchored by Rosslyn to the north (Tshwane) and is linked to the Johannesburg International Airport to the east (Ekurhuleni) via the N1/R21 and the Central Business District of Johannesburg to the south via the N1/M1 highway. This emerging Gauteng Urban Region and its strategic prominence is a very strong force that will shape Tshwane's future not only spatially, but also economically and institutionally over the next decade.

Tshwane's inner city is situated approximately 60 km from Johannesburg's city centre and the same distance from the Johannesburg International Airport.

To the North and West, Tshwane borders onto the Limpopo Province and North West Province. To the East, Tshwane shares a border with Mpumalanga Province and South, Ekurhuleni, City of Johannesburg and Mogale City which borders Tshwane on the South West.³

B1.2 SOCIO-ECONOMIC ANALYSIS

The municipality's main economic sectors are community services and government, followed by finance and manufacturing. Metal products, machinery and household products are the largest sub-sectors within manufacturing. Tshwane's economy contributed 27% to Gauteng's GDP and 9% to the national GDP in 2011. Also in the same year, Tshwane contributed 22, 2% to South Africa's total exports and 15, 9% to its total trade.

Population

The majority of people living in the City of Tshwane fall in the 15-64 age group (71, 9%), also classified as the working age. These are followed by those in the 0-14 age group (23, 2%) while the lowest group is the elderly group of 65 years and older (4, 9%).

³ MSDF 2012

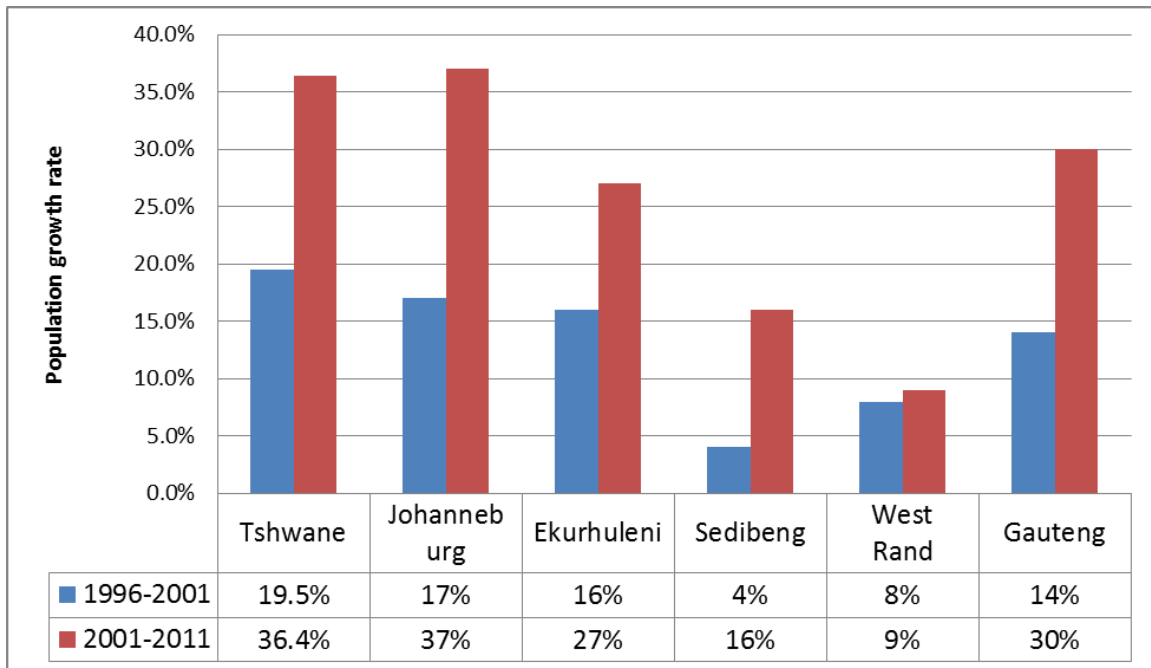
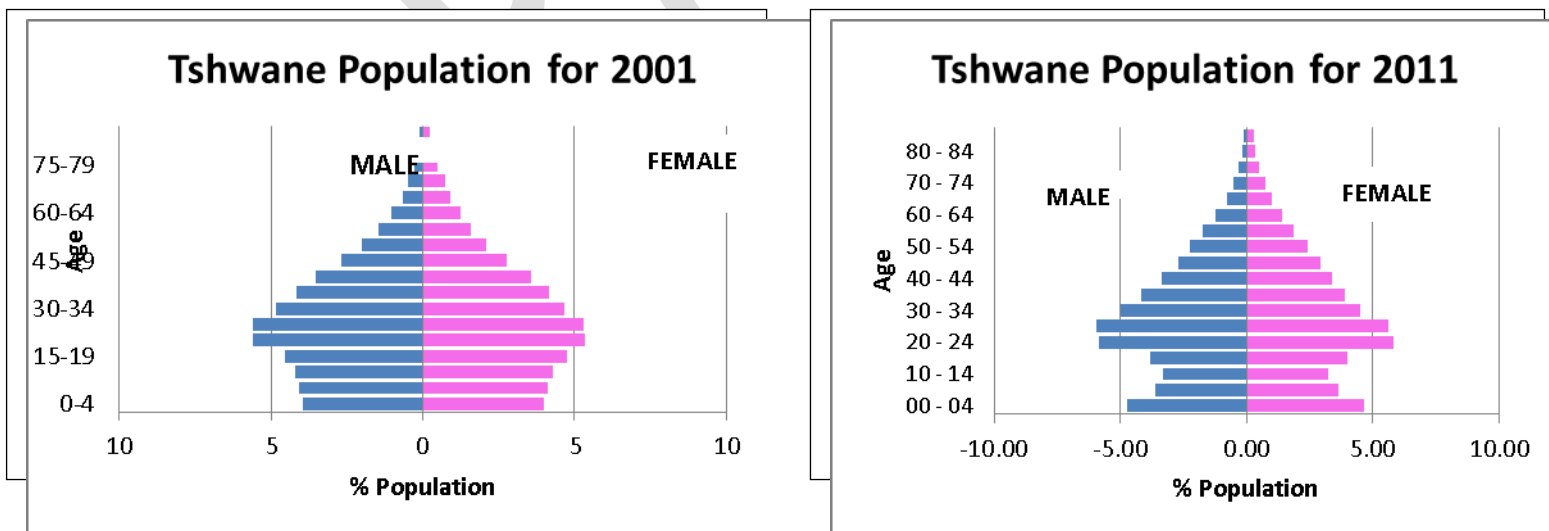


Figure1: Source: Census 2011

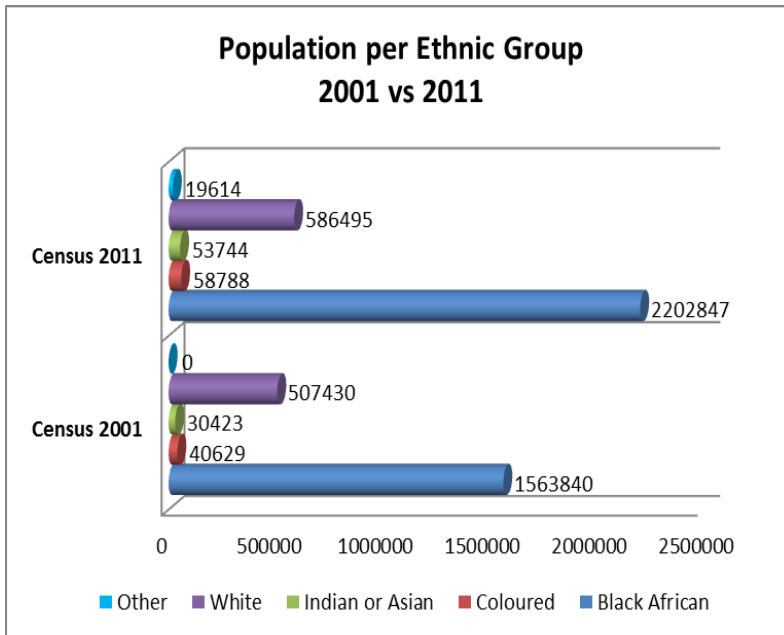
The South African population has grown by more than 15% between 2001 and 2011. Within the same period, Gauteng has grown 30% during this period. Tshwane's population growth exceeds that of the Gauteng region at 36% between the same period having the second highest growing population after the City of Johannesburg/

TSHWANE POPULATION: COMPARISON BETWEEN CENSUS PERIODS



The total population increased by approximately 36%. The largest percentage of the population falls between 19 and 34 years for. The City of Tshwane has a relative young population. This is similar to the 2001 statistics.

1. POPULATION PER ETHNIC GROUP



The White and Indian population groups account for marginally less within Tshwane.

Black African population accounts for 75.4% of the Tshwane population.

Figure 4

POPULATION PER CITY OF TSHWANE PLANNING REGION

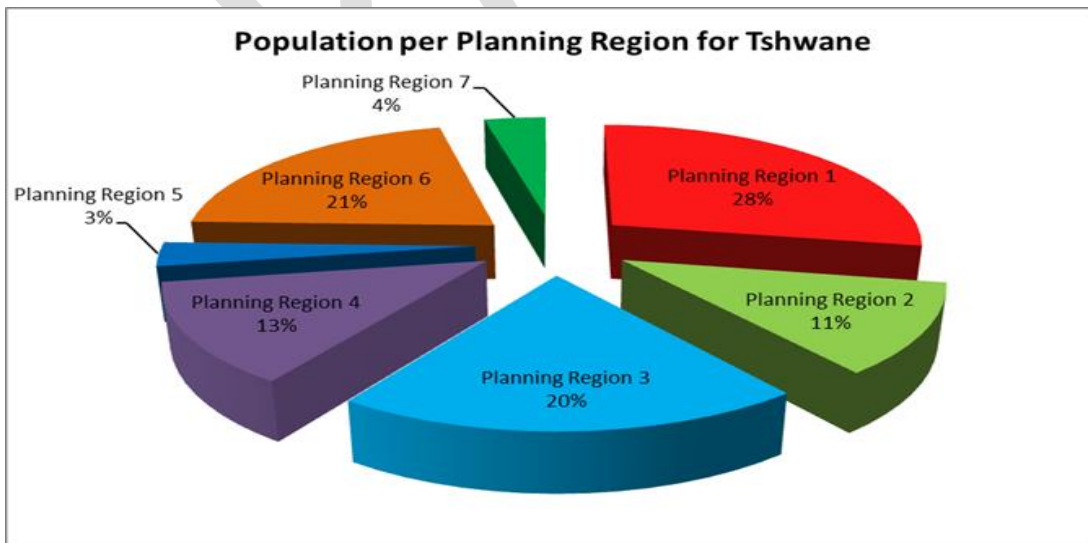


Figure 5

The largest percentage of the population resides in Region 1 and the smallest in Regions 5 and 7 (mostly rural).

MIGRATION TRENDS

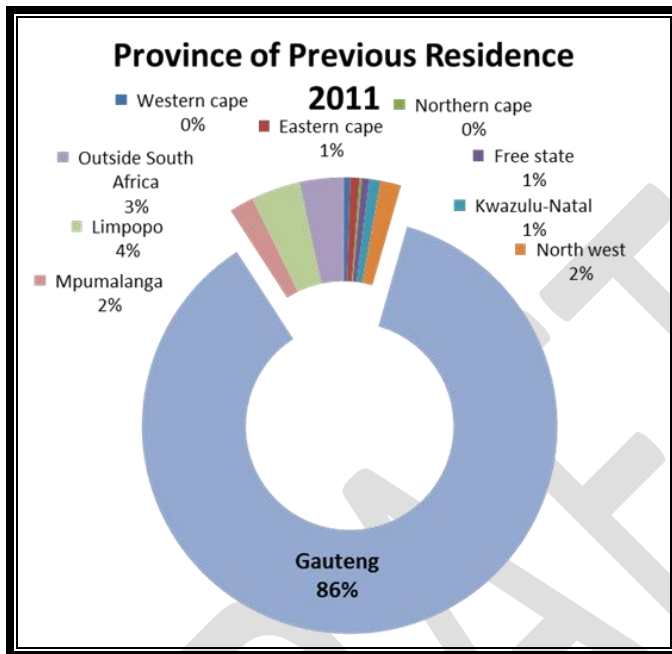


Figure 6

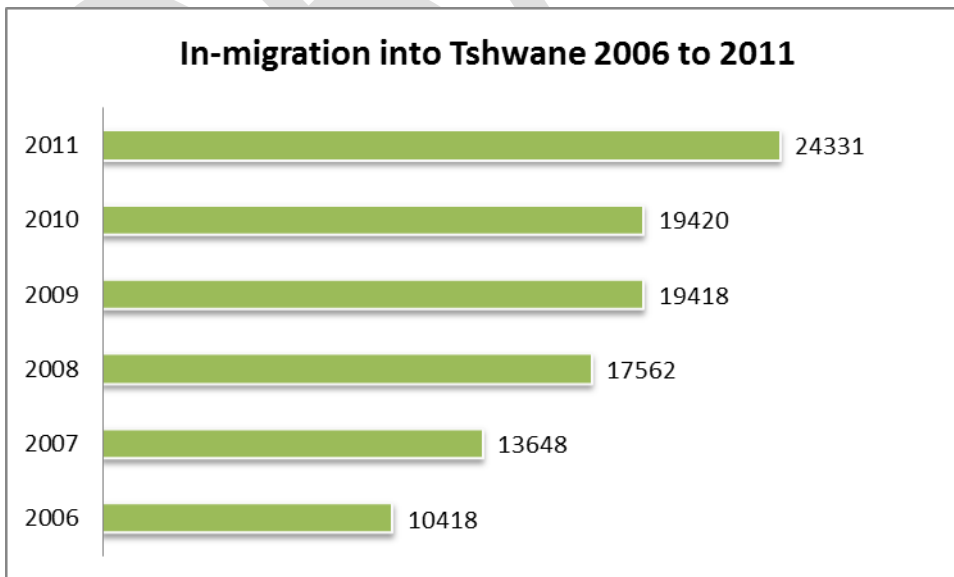


Figure 7

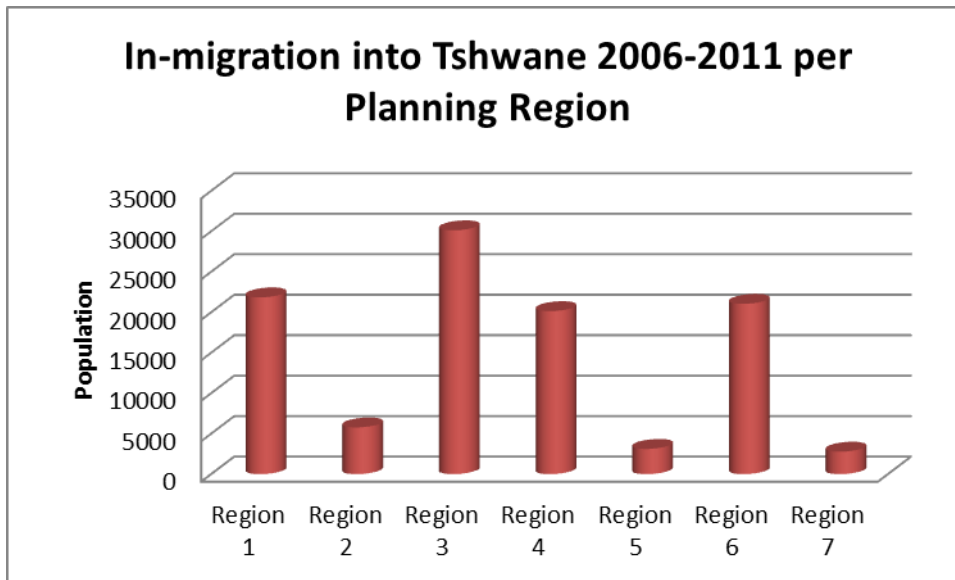


Figure 8

In-migration into Tshwane taken over the last 6 years is 22.25% per annum.

86% of Tshwane's migrants hail from other areas within the Gauteng Province. Out of other provinces, it would seem as though migrants from Limpopo Province are most prevalent followed by migrants from outside of South Africa. Noticeably migrants from North West Province prefer to settle in Planning Region 1 whereas migrants from Limpopo Province prefer to settle in Planning Region 3.

Most migration into planning regions took place in Planning Region 3, 1, 6 and 4 respectively.

Most of Tshwane's residents noted their province of usual residence as Gauteng Province where only 0.42% of Tshwane's resident's place of usual residence was elsewhere, the most of which (0.14%) stated outside South Africa.⁴

Education

The municipality has shown a decrease in the proportion of people with no formal schooling aged 20 years and older (from 8, 9% in 2001 to 4, and 2% in 2011). There was however, an increase in the proportion of people who completed matric/Std 10, from 30,1% to 34,5% in 2001 and 2011 respectively. The proportion of those 20 years and older and who also completed higher education increased from 16,5% in 2001 to 23,1% in 2011.

⁴ Draft Spatial Atlas, 2014

Unemployment rate

Between 1996 and 2001, the unemployment rate across this municipality increased by 7, 3%, with an average of 24, 3% to 31, 6% respectively. However, in 2011, the unemployment rate dropped to 24, 2% which is 0, and 1% lower than the unemployment rate in 1996.

Household income

The average household income per annum increased from R94 908 in 2001 to R182 822 in 2011.

2011 Household Incomes

Percentages %	Income per month
14,9	R0.00
2,9	R1 000-R4 800
15,5	R19 601-R38 200
0,6	R2 457 601 +

Table 2

HOUSEHOLD SERVICES

(i) Electricity

Since 1996, the proportion of households using electricity as the main source of energy for lighting, heating and cooking increased across the City of Tshwane. 88, 6% of households used electricity for lighting in 2011. This was an increase from 79, 9% in 2001. More households were using electricity for cooking in 2011 (84, 2%), this was an increase from 70, 5% in 2001. The number of households that were using electricity for heating was 73, 5% in 2011, an increase from 69, and 35% in 2001.

(ii) Piped water

In 2011, there was an increase of 89, 2% in the proportion of households with access to piped water in their dwelling or yard, compared with 79, and 7% in 2001. The proportion of households with access to piped water on a communal stand decreased to 7, 4% in 2011 from 15, and 5% in 2001. The number of households with no access to piped water decreased to 3, 4% in 2011 from 4, and 8% in 2001.

(iii) Refuse removal

The proportion of households whose refuse was removed by the local authority or a private company was 82% in 2011, which is an increase from 78, 7% in 2001. The percentage of those

with communal refuse dumps was 14, 1% in 2011, which is a decrease from 17, 4% in 2001, while those who had to remove their refuse themselves was 3, 3% in 2011 compared with 4% in 2001.

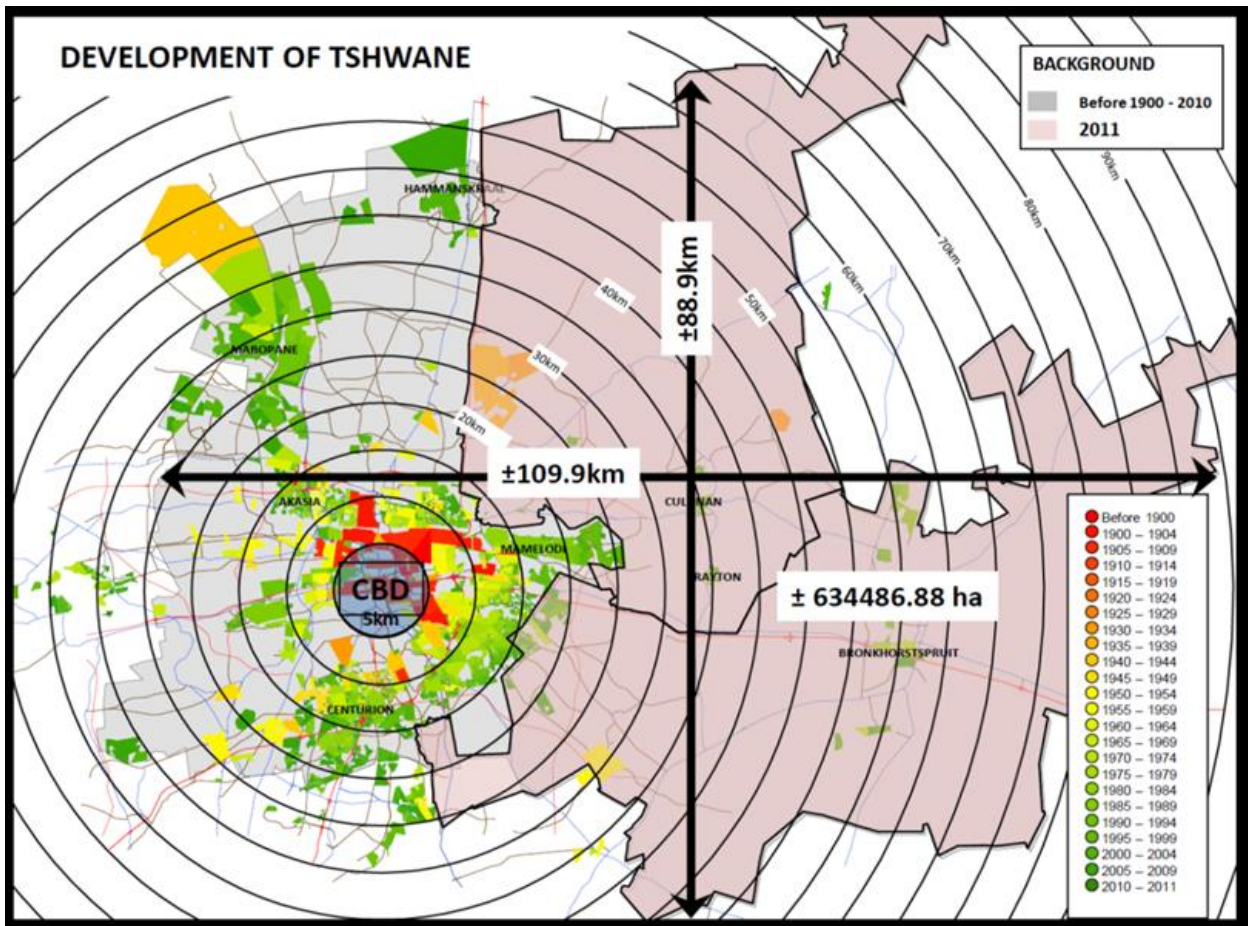
(iv) Toilet facilities

In 2011, 79, 4% of households in City of Tshwane had flush or chemical toilets (an increase from 71, 5% in 2001). On the other hand, the number of households with no toilet facilities was 1, 3% in 2011, which is a decrease from 3, and 1% in 2001.

B1 CURRENT PERFORMANCE OF THE BUILT ENVIRONMENT

TSHWANE'S CURRENT SPATIAL FORM

The CoT covers an area of 6260 km² and is the result of an amalgamation of the previous City of Tshwane, which was established in December 2000, and the three Metsweding Municipalities (Nokeng tsa Temane Local Municipality, Kungwini Local Municipality, Metsweding District Municipality), found directly east and south east of the previous City of Tshwane. It is important to remember that the City of Tshwane is not the result of planned growth, but rather, of the extension of its boundaries to incorporate new areas over time. This has resulted in a sprawled city form, vast and complex in nature. The city's spatial fabric is challenged by sprawl, unbalanced growth and non-integrated development.



Map 3

Tshwane's historical spatial growth pattern was not as a result of planned growth. In its current form today, it began as a mono-centric city before the 1900s with the Capital Core (Pretoria CBD) the main economic hub. With the development of the rail network, the city grew to the immediate east and west areas, but the east and south of the city later became the growing areas of residential development and economic centres influenced by highly-skilled, higher income communities. The inclusion of the erstwhile North West Province municipal areas north of Tshwane further added new settlements in marginalized areas far-removed from any meaningful economic activities. These areas were developed where land was cheaper and rural in nature. The recent amalgamation with the erstwhile Metsweding Municipal further added to Tshwane's land mass, but also providing some opportunities of linking Tshwane's economic activities through the Maputo Corridor to the east and Limpopo Tourism Corridor to the North, but it is the displaced communities that should be well-considered in the building of the Capital.

The City of Tshwane is divided into seven planning regions:

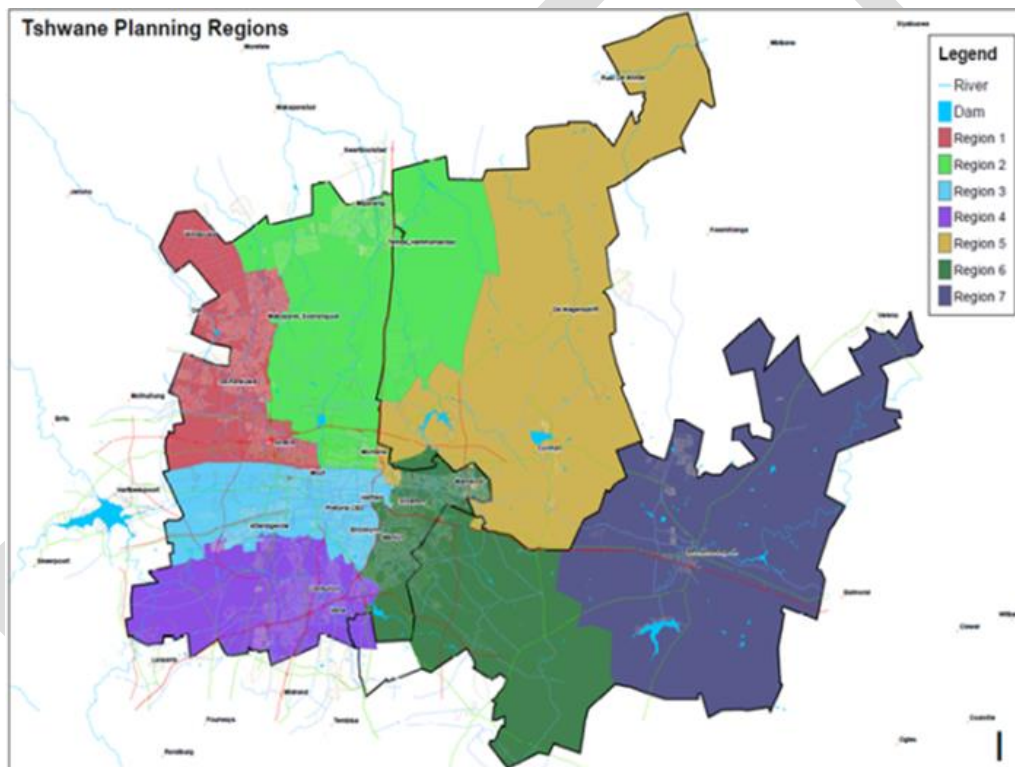
Region 1

A significant number of the population has low levels of education, high unemployment, very low incomes and poor living standards. In view of the specialised nature of the industrial areas, there are limited job opportunities for unskilled labourers in the region. In addition to this, the

proximity of Limpopo to the North-west region results in a constant influx of people (mostly unskilled and semi-skilled) from these provinces into Tshwane, who generally tend to settle informally in the most northern part of Tshwane which acts as a “transitional zone” for the first wave of urbanisation.

Region 2

Some of the northern areas within the region are plagued by the problems associated with historic land use and settlement policies and previous administrative boundaries, making township establishment and the benefits associated with this difficult in some areas. Other challenges include the role of the tribal authorities in land management. The infrastructure landscape differs vastly across the region. The southern section is well catered for, while the northern section requires several upgrades in order to support development plans for the area.



Map 4

Region 3

The region is the host of several national government departments and forms the administrative heart of government. The CBD is the largest job opportunity zone in the CoT. The region is generally well provided for in terms of service infrastructure. Rapid development is expanding towards the provincial urban edge. Nonetheless, future development may be subjected to future bulk infrastructure limitations. Unfortunately, further challenges exist in the fact that the CBD has lost its status as the focal point of commercial and office related activity within the metropolitan area. This is largely due to the development of a number of high order

decentralised nodes. This has partially led to a gradual process of urban decay within the CBD and surrounding areas.

Region 4

The region's strategic location along the border of Johannesburg has meant that it has progressively developed further towards the south as the growing attraction to the convenience and economic sense of its location has grabbed the attention of many investors. The Highveld Technopark is one such development that is testament to this.

Apart from infrastructure requirements and development trends, the low densities are also influenced by the underlying dolomite in the area. Vacant areas within the suburban environment have recently developed extensively with densities varying from 60 units per hectare. There still exists an opportunity to extend residential developments in the westerly direction (Monavoni and surrounds).

Though well serviced, the provision of bulk services is lagging behind the rapid population growth. Existing infrastructure requires upgrading and maintenance.

Region 5

Development pressures exist primarily in the southern part of the region where Rayton and Cullinan are located. The strength of the Rayton and Cullinan area is that they are the only two urban centres to be found within the largely rural region. This creates opportunities for clustering and focusing various development initiatives at those specific localities. The intensities of the developments in these localities will be to the level of a secondary node (relative to the existing Metropolitan Cores which represent the primary nodes of the City). In terms of the MSDP, Cullinan is identified as a specialized activity area, specifically a tourism node due to the high concentration of existing and potential tourism activity. Rayton is identified as a small town within a largely rural area. The proposals for Rayton are discussed in the Regional Spatial Framework for Region 5. Development within these areas will also be subject to infrastructure provision capabilities. Currently, significant service backlogs exist.

The vast rural areas have potential for developing into agricultural hubs within the rural management context.

Region 6

Region 6 is popular in terms of retail as well as office functions as many of the higher category retail and office functions of the City have relocated to this region over the past few years. This region accommodates some of the city's most affluent citizens, though it is important to note that there is a clear distinction between the southern and northern sections of the region: the northern section being less developed and having less economic opportunities and thus a higher unemployment rate. The southern section, on the other hand, continues to develop at a rapid pace, with many investors vying to locate their businesses in that area. The region as a whole is well serviced, but will eventually require upgrades if the development in the area continues at the same pace.

Region 7

Region 7 forms the Eastern most part of the CoT and is comparable in size to region 5. Like region 5, Region 7 also consists of a large rural component and includes areas such as Bronkhorstspuit and Ekandustria Industrial area. The region is the gateway to Gauteng from Mpumalanga via the Maputo Corridor.

SPATIAL ANALYSIS

Some of Tshwane's main features are highlighted below as critical urban elements for spatial restructuring:

- The magnificent Union Buildings, which overlook the city from where it sits on Meintjieskop, represents the official seat of the South African Government and house the offices of the country's President. It is the same place where former president Nelson Mandela's body lay in state, and is also the centre of government with all the national government departments being located here. Tshwane is also home to over 130 embassies, representing the second largest concentration after Washington D.C;
- The industrial area of Rosslyn and the townships of Soshanguve and Ga-Rankuwa are situated north of Pretoria CBD (Capital Core);
- Cullinan, which is well known for its diamonds, and Mamelodi lie to the east;
- Also situated to the east of Pretoria is the CSIR, one of South Africa's leading science and Technology research, development and implementation centres as well as the Innovation Hub. Africa's first internationally accredited science park and a full member of the International Association of Science Parks. In 2012, the Climate Innovation Centre and a Bioscience Park was established at the Innovation Hub to help entrepreneurs to develop and commercialise green technologies that will help disadvantaged communities;
- The Wonderboom Airport and the Waterkloof Airforce base lies towards the north and south east respectively. Denel Military research and development is situated towards the east and are the largest manufacturer of defence equipment in South Africa. Situated to the east is Aerosud, it is an established leader in the South African aviation industry and highly competitive in the international marketplace of aeronautical engineering.;
- Situated in the north is ARC Onderstepoort Veterinary Institute is nationally and internationally recognized as a veterinary centre of excellence. The ARC-OVI is a flagship institution of the Agricultural Research Council and plays an important role in maintaining the health of our national herd and wildlife;
- Not far from the Capital Core you will find UNISA, Pretoria University as well as Tshwane University of Technology forming a strong Knowledge Economy Hub;

Figure 9 indicates that the Tshwane Capital Core (Inner City) is by far the largest node of employment in the City, followed by the Centurion Strip/CBD, Hatfield/Arcadia/Sunnyside, Silverton/Waltloo and Pretoria West.⁵

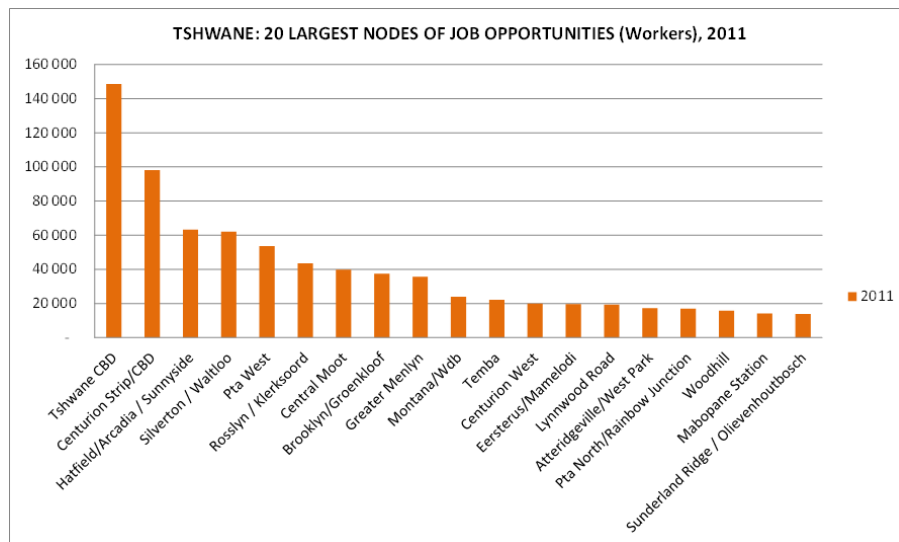


Figure 9: Tshwane: 20 Largest Nodes of Job Opportunities, 2011

The Capital Core- the Tshwane Inner city is identified as the Capital Core as it is the city's first order node amongst all metropolitan nodes. Traditionally, the inner city is also the Central Business District (CBD) of major cities. Tshwane is no different. Historically, the inner city was the geographic heart and centre of what is now the Tshwane area. Over time, though, due to the extension of the Tshwane boundaries, the Inner City is no longer geographically central, but still plays a very important role with regards to the concentration of retail, office and government buildings to be found in the area.

They key to creating an efficient and sustainable city across such a vast land mass is to implement nodal development strategies. Across these seven regions outlined above, an important distinction is made between four nodal typologies with the highest order being the Capital Core. The other 3 are described below and should be read with map.

METROPOLITAN NODES	are primary nodes of the highest order. These nodes accommodate the highest degree of service specialisation and offer the widest range of services. Often, metropolitan nodes will have regional/provincial relevance. In the Tshwane context, Metropolitan nodes are those nodes within the City (economically) benefiting primarily from the investment of the private sector. Equally important is that these nodes serve as economic hubs and focal points for employment opportunities. The role of the public sector in such nodes is to manage the rate of growth, provide infrastructure in line with the growth management plan and maintain the urban environment.
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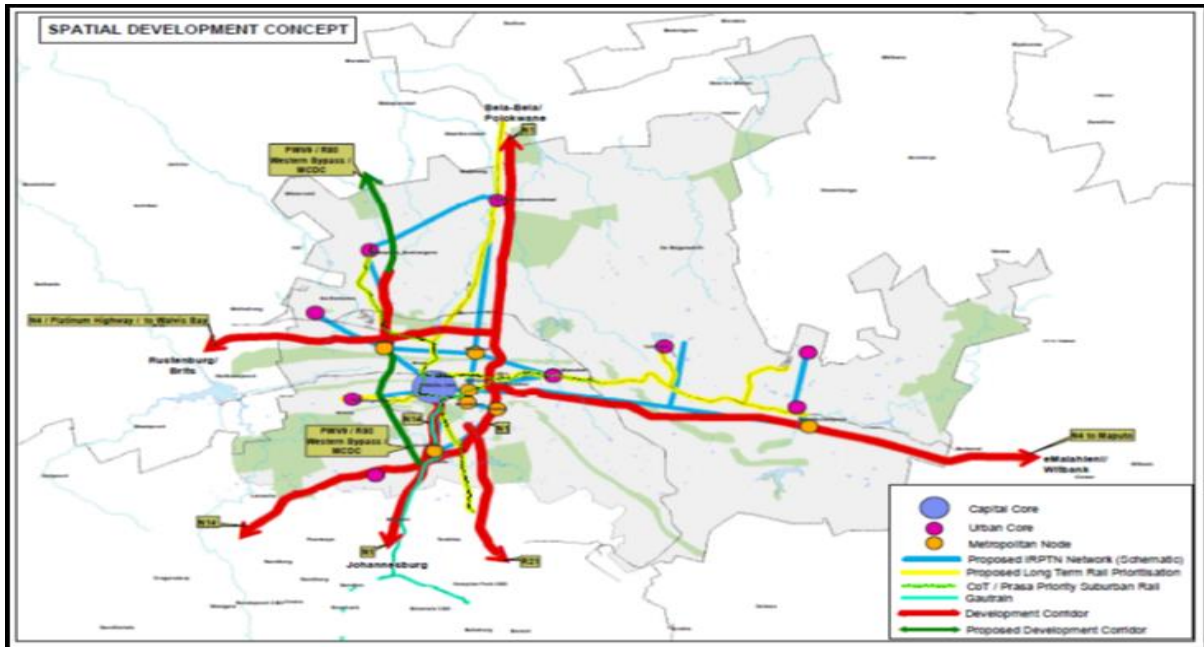
⁵ Status Quo Report: Draft CITP, 2014

	Such localities are also where the most extensive land use rights, including densities, are likely to be supported, in line with the growth management strategy.
URBAN CORES	Urban Cores- former township areas were developed as a result of forced relocation programmes. Inevitably, these townships grew to accommodate large populations of low income or unemployed people. The economic circumstance was clearly evident in the quality of the physical environment. Under the new government which was established in 1994, these township areas were identified, not as a blight in the urban fabric as previously thought of, but as beacons of opportunity, through the human capital that was concentrated within the various communities of the townships. Due to the great need that often belies such nodes, the government has to play a more active role in social and economic restructuring, especially in view of the limited private investment, relative to Metropolitan cores. The Neighbourhood Development Programme (NDPG) is a nationally funded programme that aims to address the improved quality of environment in urban cores.
EMERGING NODES	Emerging nodes- over the past few years, certain economic, social and/or residential opportunities have begun to emerge in various localities in the city. The realisation of these localities into fully fledged nodes will depend on a number of factors. While the future of these nodes is uncertain, the potential for greater development is clear. Identifying future urban areas also provides an opportunity to plan for the provision of new infrastructure and timely planning for growth that is sustainable. Emerging nodes will be managed subject to growth management principles.

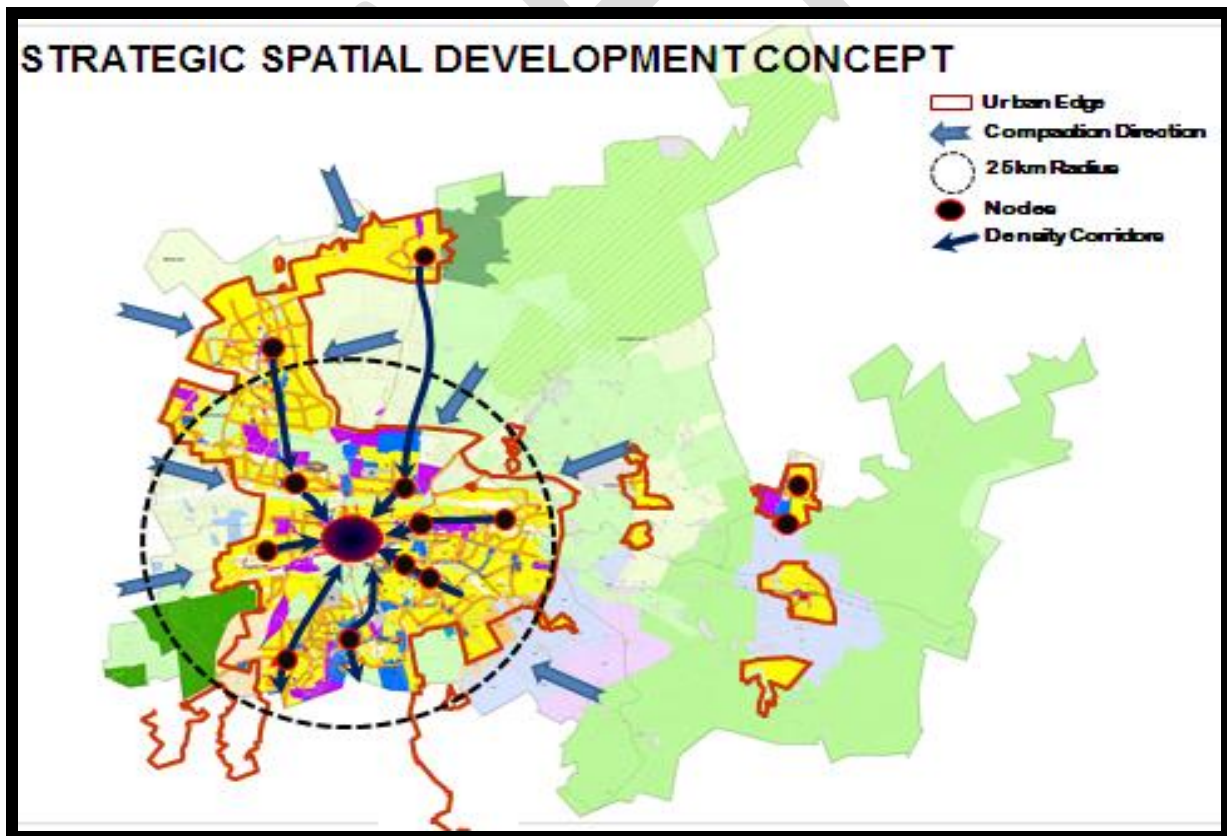
Table 3

Focussed spatial interventions for various nodes are further described in detail under C2 (Regional Spatial Interventions).

MSDF 2012 SPATIAL CONCEPT



Map 5: MSDF 2012 Spatial Development Concept



Map 6: Intended Spatially-led Investment as per MSDF 2012 and RSDFs 2014

GUIDING SPATIAL GROWTH AND DEVELOPMENT: (MSDF 2012 AND RSDFS 2014)

The City of Tshwane approved the MSDF in 2012 and the RSDFs in 2014. These documents provide the spatial strategy of the city at macro and micro level. Maps 5 illustrates the nodal and corridor development concept advocated in the MSDF 2012 and Map 6 further defines the nodal and corridor development concept at a regional level encompassing spatial structuring elements.

The short-medium term key focus areas for development should be contained within the 25km radius from the Capital Core (CBD). Depending on the intensity and pace of development it could even run into the long-term to realize meaningful infill and intensification within the 25km radius. The rationale is based on sustainable development principles, which seek to improve efficiency and maximum utilization of available resources;

-In reality, where development already exists in the periphery (beyond the 25km radius)a maintenance development strategy should be applied in support of developing sustainable human settlements;

-This entails provision of new infrastructure where required, eradication of service backlogs in marginalized communities as well as maintenance of existing infrastructure or re-capitalisation of assets;

-Provision of social infrastructure should be primarily focused on nodal areas in form of multi-purpose centres accommodating a range of services such as health, educational, safety and security, customer care, emergency facilities as well as other state services prescribed to be provided for the benefit of serving larger communities.

Nodal development:

- The city has prioritized and announced on Strategic Nodes for development, namely, the Inner City (West Capital), Centurion CBD, Zone of Choice (Rainbow Junction), Corridor Development (TRT Line 1);

-National Priority development interventions of significance in Tshwane include the Inner City Revitalisation, Rosslyn Automotive Cluster, the Gautrain Stations in Hatfield, Centurion and Pretoria Stations, and the Freight and Logistics Hub in Pyramid linking with the Wonderboom Airport;

-For the *Development of the North*: spatial targeting for impactful development serving regional community interests to support liveability. Main focus will be on nodes to catalyse economic growth in transit oriented spaces such as Mabopane Station, Ga-Rankuwa Nodes (Medunsa/TUT and CBD), Kopanong Station in Soshanguve South, Hammanskraal CBD. The objectives is to revive marginalized communities through economic development in public transport nodes, but also through provision of a range of services and opportunities to support liveability.

-In the *Central east and west of Tshwane*: spatial interventions for sustainable use of available resources will focus in (West) Atteridgeville Station, Saulsville Station linking to Atteridgeville CBD and surrounding localities for infill and densification. Large tracts of land have already been earmarked for mixed use high density human settlements. Whilst the (East) will requires infrastructure upgrade and connectivity to the Menlyn Node, in the Mamelodi area transit oriented zones in Eerste Fabrieke, Denneboom, Greenview and around the town centre require infrastructure upgrade to unlock land development, intensification of mixed uses with transport providing the strong anchor for development .

GUIDING SPATIAL GROWTH AND DEVELOPMENT: (MSDF 2012 AND RSDFS 2014)

The City of Tshwane approved the MSDF in 2012 and the RSDFs in 2014. These documents provide the spatial strategy of the city at macro and micro level. Maps 5 illustrates the nodal and corridor development concept advocated in the MSDF 2012 and Map 6 further defines the nodal and corridor development concept at a regional level encompassing spatial structuring elements.

-*South of Tshwane:* Olievenhoutbosch node offers opportunity for mixed use development with varying housing densities, whilst the Centurion CBD has a regional relevance anchored by the Gautrain station and the retail and office component.
-The far east of the city envisions a mega town centre in the far east and application of the revitalization in the township areas of Refilwe, Rethabiseng, Zithobeni, Bronkhorstspuit, whilst the rural area requires investment in the agricultural sector.

Contain development within the growth management zones as identified in the RSDFs.
-This means containing growth within the demarcated urban edge area with primary focus in localities where infrastructure already exists.

Application of the Densification and Compaction Strategy around nodes and corridors towards achieving the MSDF 2012 intended outcomes. Tshwane's spatial forms remains fragmented and sprawled disadvantaging its communities. Human Settlement Development should be focused in nodes and corridors.
Whilst there remains a significant need for upgrading of informal settlements, the city should begin re-integrating its communities in attempting to achieve social cohesion and a functional urban space.
The implementation of the Tshwane Rapid Transport (TRT) network, remains a short-medium-long-term priority corridor for densification. This should encompass packaging detailed specific localities, various types of mixed land use yield, socio-economic infrastructure requirements and costing thereof. It is within these corridors that various income group housing typologies should be introduced in support of densification principles with supporting socio-economic infrastructure, livable spaces such as public parks, public arts, accessibility to pedestrian walk-ways, cycle paths etc.

B2 ECONOMIC INFRASTRUCTURE REVIEW

The Gauteng Spatial Development Framework elevates the prominence of Tshwane as part of the Gauteng Economic Core, an administrative capital city and home to the public sector is highlighted, as well as the importance of the concentration of economic opportunities in the southern and eastern parts of Tshwane (now forming part of regions 5, 6 and 7). The following five critical factors were identified in the GSDF and their spatial implications are included in the MSDF 2012:

- Contained urban growth
- Resource based economic development (resulting in the identification of the economic core)
- Re-direction of urban growth (stabilise/limit growth in economically non-viable areas, achieve growth on the land within the economic growth sphere)
- Protection of rural areas and enhancement of tourism and agricultural related activities
- Increased access and mobility.

In terms of the composite spatial plan for Gauteng, the following are of specific importance for Tshwane:

- Gauteng economic core, focussed along the R21 and N1 with Rosslyn as its northern anchor (and the Johannesburg CBD and OR Tambo International Airport in Ekurhuleni as the other anchors of the Economic Core)
- The support of corridor development along the N1, and R21
- The importance of the R21, N1, Proposed PWV9, N1 (towards Bronkhorstspuit) and Proposed PWV2 as mobility spines.

Over the years policy and plans in the country have been modelled for urban transformation. The defined objective is to promote Gauteng as a **Global City Region** (GCR) i.e. *“to build Gauteng into an integrated and globally competitive region where activities of different parts of the Province complement each other in consolidating Gauteng as an economic hub of Africa and internally recognized global city region”* The concept of global city regions can be traced back to the “world cities” idea by Hall (1966). The idea seeks to promote Gauteng’s development agenda by positioning the province as a globally competitive city region. The key objective is to reduce unemployment and poverty through promoting economic growth, integrated strategies and joint planning between the different spheres of government.⁶

⁶ MSDF 2012

The Updated BEPP 2015/2016 will address the Gauteng Global City Region economic drivers in respect of the interventions highlighted in the GSDF collaborated with both Ekurhuleni and the City of Johannesburg.

In March of 2011, the CoT approved the *Tshwane Strategic Investment Attraction, Facilitation and Aftercare Plan (2011-2016)*. The purpose of the plan is to *outline the City of Tshwane's strategic and systematic approach to the investment promotion, attraction, facilitation and retention function with the view to increase investment volumes in the City which would have a direct impact on economic growth and developments, as well as increase the employment creation potential of the economy.*

The plan identifies the following as priority investment sectors for Tshwane:

- Automotives and Components
- Tourism and Related services
- Agriculture and Agro-processing
- Aerospace and Defence technologies
- Mixed Manufacturing
- Research and Development
- Alternative and Renewable Technologies
- Business Process Outsourcing and Off-shoring
- Mining and Beneficiation

Map 7 below illustrates the spatial location of the above.

- (g) Promote a transport system that ensures equal opportunities to access all parts of the city.
- (h) Provide and promotes affordable transport that meets the needs of all the customers.

Freight

The Freight Status Quo Chapter of the Draft CIP 2014 provides the assessment of Tshwane's freight

One of its biggest challenges in South Africa will be to provide sufficient road and rail capacity in the next 25 years. Considering, the fact that the capacity expansion programmes at the port of Durban mainly makes provision for container terminals and an automotive terminal which directly affect Tshwane. The number of Twenty Foot Equivalent Units (TEUs) will increase from 3 million per annum to 13.9 million per annum. It is planned that more than 5 million of these TEUs will move to Gauteng with a margin to Tshwane.

All the terminals are located in municipal areas which causes traffic congestion in and around the terminals during peak hours. City Deep the only import/export terminal in Gauteng has only handle a fraction of the total TEUs to Gauteng. Therefor the opportunity exists that a terminal or terminals can be developed on the periphery of Gauteng.

Freight landscape in Tshwane

In this section the primary freight generators are identified and are illustrated in **Table 5.58**.

Primary freight generators include the following:

Heavy industrial areas (Mittal, PPC and Transnet workshops at Koedoespoort and Capital Park)

Light industrial areas (small scale manufacturing and warehousing)

Container terminal(s)

Fuel tanks (Waltloo)

Automotive manufactures

Distribution centers, SAB, ABI Coke Cola and the fresh produce market

Table 1 illustrates that the most of the industries lie linear from West to East in the CBD. Rosslyn on the North West, Temba/ Babelegi on the far North and Centurion on the South are located close to the N1 and N4 freeway network.

<ul style="list-style-type: none"> Industries in the CBD which include Mittal on the West and Transnet workshops, Waltloo fuel tanks and Samcor (Ford, Mazda) on the East. Rosslyn on the North West with BMW, Nissan and SAB. Pyramid (in white) is a key Transnet freight junction. 	
Temba on the far North with some manufacturing activities	<ul style="list-style-type: none"> Centurion hosting one of the biggest distribution centres in the country close to the residential areas. Centurion is also close to Samrand and Midrand within the high valued goods belt.

Table 1: Main Freight generators in Tshwane

It is clear from **Table 2** that the areas where freight is generated has a direct impact on the flow of traffic and could contribute to congestion during peak hours. The following road freight generating areas are further assessed to understand the role and functionality of each, they are as follows:

- Pretcon in the Capital Park area;
- Roscon in Rosslyn
- Rosslyn automotive cluster;
- Waltloo.

Each of the above is discussed in more detail in the following tables.

Pretcon the exiting container terminal in Tshwane CBD	
Stacking area	1 194 TEUs
Number of Rail Tracks	2 x 50 wagon track
Throughput in 2011	210 container movements
Number of trainins per day	1 train per day
Operating hours	Daylight
Road access	Paul Kruger road

Constraints	<ul style="list-style-type: none"> ▪ Rail access to the site through metro lines. ▪ Terminal operates at capacity. ▪ Restricted road access. ▪ Site next to residential area. ▪ Limited expansion capability. ▪ Operations during peak hours. ▪ Queuing of trucks at terminal affect traffic in the area. ▪ Aged handling equipment.
Rosslyn Terminal in Rosslyn and close to the Rosslyn station	
<ul style="list-style-type: none"> ▪ Roscon has no container activities. ▪ Loading chrome at the site. ▪ Road access to the site is limit. ▪ Rail access to the site through metro lines. ▪ No capacity expansion capabilities. 	

Table2: Pretcon and Rosslyn freight terminals

Automotive Area in Rosslyn

Rosslyn can be seen as the inland automotive hub in South Africa where you can find the following functionalities:

BMW and Nissan motor manufacturers;

Private container terminals located close to manufactures. The cargo in these containers is directly related to the industry and includes vehicle parts, manufacturing components, chemicals and upholstery;

Utilize road transport extensively;

Rail access to the motor manufacturers and terminals through the metro network;

No direct access to the 25 kV freight line;

Limited rail capacity for export vehicles;

The automotive city provides upmarket offices and conference facilities;

Samcor (Ford and Mazda) are located in Waltloo and have the same functionality.

The last key freight generator is the fuel tank farm in Waltloo. **Figure 0** illustrates the layout of the facility. The facility is owned by the private operators like, BP, SASOL and Total. Transnet supply fuel through the fuel pipeline from Durban, to the facility. The facility supply fuel to Tshwane CBD and neighbouring regions which include Mpumalanga, Polokwane and North West.

The fuel tank facility is located in an environmental sensitive close to other industries. Tanks are not filled to capacity due to safety risk. Some of the tanks will reach the end of their life cycle in the next to 10 to 15 years. Distribution fuel domestically and to the industry becomes a challenge during peak hour operation. Access to and from N1 and N4 are through residential areas, and therefore this increase the level of risk for incidents.

CONSTRAINTS IN RESPECT OF FREIGHT GENERATING FACILITIES IN THE CITY OF TSHWANE

Limited capacity to expand;

Located in the CBD and in or close to residential areas;

Limited road access;

Limited rail access;

Distribution through the CBD during peak hours;

In most instances the facilities are old and will reach the end of its life cycle within the next few years.

The following key principles and departure points are considering in developing the freight strategy for Tshwane, namely:

Identify freight growth nodes;

Decrease the number of heavy freight vehicles in the CBD;

Align with Gauteng integrated transport strategies;

Establish an Light Industrial Hub in the Pyramid precinct to unlock economic growth in Tshwane and to lower logistic costs of freight;

Align freight intermodal facilities with Transnet's Container Strategy for Gauteng and Durban port developments;

Provide supporting infrastructure to freight intermodal facilities;

Provide adequate overload control mechanisms at freight intermodal facilities;

Provide adequate public transport to the planned freight intermodal facilities and associated developments around it;

Provide adequate levels of safety and security.

In summary each of the above freight generating facilities have the following constraints:

Road Freight Routes

The main road freight routes can be divided into the following corridors:

- N1 to Polokwane and SADC;
- N4 West to North West and Botswana;
- N4 East to Mpumalanga and Maputo;
- N1, and R21 going South to the rest of Gauteng and coast;
- N14 to Krugersdorp and Cape provinces.

Secondary roads supporting the main roads and provide alternative options to the tolled roads are as follows:

- R101 to Bela Bela and Johannesburg;
- R104 to Mpumalanga and R104 and old N4 to North West;
- R573 to Moloto;
- R55 to Johannesburg.

Figure 0 illustrates the main freight roads in Tshwane with the number of vehicles on the main roads. N1 and R21 carry the most total heavy vehicles and long heavy vehicles. Copper, cobalt, cotton and other products from SADC are transported on N1 through the CBD to the R21 to City Deep or the Port of Durban.

Rail Network

The freight network located on the outer ring of Tshwane running through the Pyramid yard. The Pyramid yard is one of the main freight hubs in the rail network linking the 25 kV network from Thabazimbi and Polokwane to the 3 kV network to Tshwane CBD, Mpumalanga and Sentrarand. The Pyramid yard can accommodate 100 wagon trains destined for the export market.

Currently, rail access to the Rosslyn industrial area is through the PRASA/metro area. Ideally all rail freight should be moved to the freight network. A link could be provided from the freight network into the Rosslyn area.

ORIGIN/ DESTINATION	TYPE OF FREIGHT
Rail based products Lephalale, Thabazimbi, Rustenburg, Marikana, Bleskop	<ul style="list-style-type: none"> • Export market: coal, chrome, ferro-chrome, granite. • Local market: cement, iron ore, vermiculite, coal. • Imports to area: fuel, coking coal, containers, magnetite, manganese and alloys.
Tshwane	By Rail <ul style="list-style-type: none"> • Clinker for PPC. • Containers. • Cement.

ORIGIN/ DESTINATION	TYPE OF FREIGHT
	<ul style="list-style-type: none"> Fuel and chemicals. Heavy engineering products.
	<p>By Road</p> <ul style="list-style-type: none"> Containers Food and processed foods Beverages. Building materials. Textile and footwear. Coal. High valued goods. Vehicles. Spares and equipment. Engineering materials. Livestock. Agricultural products. Fuel and chemicals.

Table 4: Freight on the rail and road network

Currently, rail access to the Rosslyn industrial area is through the PRASA/metro line. Ideally all rail freight should be moved to the freight network. A link could be provided from the freight network into the Rosslyn area.

The highest extent of overloading occurred on the R573 (Moloto Road, North-East of Pretoria), with approximately 30 % of heavy vehicles overloaded in the North-bound direction and 15 % in the South-bound direction, based on the data for the third quarter in 2008. The R25 south-bound, which links Bronkhorstspuit with the East Rand, is another road with a high extent of overloading of approximately 17 %, based on data for the third quarter of 2008. Further weighbridges exists in Centurion, Waltloo and Akasia test ground but are mainly used to classify

A few projects have been identified to support the primary strategy.

The project and the phasing thereof will be

finalised during the strategy phase and will be aligned with the Transnet terminal strategy and the Gauteng Integrated Transport Plan.

			Short term	Medium Term	Long term
Area	Type of infra	Development	2012 - 2017	2018 - 2032	>2032
Rosslyn Auto City	External Road Infrastructure	PWV9 (Southwards to N14)		*	
Rosslyn Auto City	External Road Infrastructure	K8 (Doubling of existing road) Access to PWV 9		*	
Rosslyn Auto City	External Road Infrastructure	K63 (upgrading existing road)	*		
Rosslyn Auto City	External Road Infrastructure	K67 (Interchange + new link) (from K8 to N4)			*
Rosslyn Auto City	External Road Infrastructure	K6 (new link) (from K67 to PWV9)			*
Pyramid	Hub Infrastructure (Excl Rail & Terminals)	Building infrastructure & Bulk infrastructure			
Pyramid	Rail & Terminal infrastructure	Pyramid Automotive Phase 1		*	
Pyramid	Rail & Terminal infrastructure	Pyramid Container Phase 1		*	
Pyramid	Rail & Terminal infrastructure	Pyramid Palletised Phase 1		*	
Pyramid	External Road Infrastructure	K6 (Between N1 and K97)		*	
Pyramid	External Road Infrastructure	K9 from N4			*
Pyramid	External Road Infrastructure	PWV2 (N4 west to PWV 17)		*	
Pyramid	External Road Infrastructure	PWV17 (PWV2 to N4 east)		*	
Pyramid	External Road Infrastructure	PWV17 N4 east to N3)		*	*
Pyramid	External Road Infrastructure	N1 interchange to K6		*	

Table 0: Strategic project

Funding Sources

The main mechanism through which national, provincial and municipal authorities obtain funding for their expenditure requirements is the Division of Revenue Act (DoRA) and consequently the largest source of funding for capital transport projects will come from PTIS funds, followed by internal funds (i.e. revenue generated by Council e.g. rates and taxes) and loans incurred by council. The PTIS funds are largely earmarked for the TRT project. Other funding like public contributions and capital funded through operating will play a minor role in future funding mechanisms.

Most third party grant funders channel their funding via National Treasury, and the City is required to apply for these grant opportunities. Application submissions for these grants require specialised skills, such as financial modelling and economic assessment, given the numerous and diverse requirements and conditions associated with different funders. This poses challenges in many instances on transport departments which results in their inability to access these grants continuously or timely.

SOCIO-ECONOMIC INFRASTRUCTURE – CENTURION ECONOMIC NODE

This section should provide the modelling of all socio-economic infrastructure for the city's priority nodes. Thus far, the city is in the process of developing some of the nodes/precincts infrastructure master plans.

The redevelopment of the Centurion Metropolitan Node is anchored by the Gautrain Station, Centurion CBD including sections, which offer vacant land within the node. An infrastructure master plan in support of the proposed Centurion SDF is being developed. The objectives and socio-economic infrastructure capital programmes are discussed below.

The objectives aim to:

- encourage and facilitate the shift from a car dominated environment to one based on Transit Oriented Development;
- Increase regional accessibility points off the N1 and N14 in a manner that will assist in spreading traffic loads across the road and street grid within the CBD thus providing greater choice of route to and from the area;
- Increase and improve the accessibility of the CBD Core within the Centurion Metropolitan Node across all modes of transportation including public transport and NMT;
- Establish an integrated vehicular and pedestrian network with capacity that will improve local access and circulation and accommodate existing and longer term development expectations;
- Establish a significantly enhanced level of pedestrian prioritisation via a network throughout the area that effectively and safely links transport nodes, land use districts and neighbourhoods;
- Rationalise the various public transport systems running through or converging in the CBD so as to optimise public transportation accessibility, services and infrastructure.
- Introduce a private vehicle parking system that supports existing and increased development activity within the node, but that encourages and supports the transition to public transport and pedestrian prioritisation;

- Establish the physical transportation networks and operation systems in a manner that will be able to accommodate Integrated Transport Management Systems (i.e. Smart City).

Regional Access System within the Centurion Node context:

Regional accessibility is provided off the N1 and N14 road systems at two interchanges (i.e. Class One Roads). The anticipated future development will require;

- Additional capacity either in the form of upgraded interchanges and / or additional interchanges.
- These interchanges will also be part of the access infrastructure for the wider Centurion Metropolitan Node and accordingly the modelling area for private transport (cars) is much larger than only the Centurion study area.
- The suburbs that have been added included Rooihuiskraal North, Eldoraigne, Wierdapark, Clubview, Tamara park, Cranbrook Vale, Celtisdal, Amberfield, Eco Park Estate, Highveld Techno Park, Highveld, Centurion Golf Estate, Irene Security Village and Irene Farm Villages.

The following interchange improvements are proposed:

- John Vorster Drive interchange on the N1 (upgrade)
- parclo interchange at the intersection of the N1 and Botha Avenue
- parclo interchange at the intersection of the N1 and Jean Avenue
- parclo interchange at the intersection of the N14 and Jean Avenue
- full interchange at the intersection of the N14 and West Avenue
- Half diamond at the intersection of the N14 and H F Verwoerd Drive
- Parclo interchange at the intersection of N14 and Rooihuiskraal Drive

Circulation Network within the Centurion Node

At the local level the study area is currently served by a network of Class 2, 3 and 4(b) roads, which link it to higher order systems via the existing and proposed new interchanges and intersections and integrates the area with its immediate surroundings. Some elements of the grid are incomplete and these will need to be constructed or upgraded according to development demand, priorities and phasing and they include:

- Widening John Vorster Drive between the West Avenue off ramp (south) of National Route 1 and the intersection of Lenchen Avenue;
- Widening of Lenchen Avenue to John Vorster Drive and National Route 14 from a single carriageway to a dual carriageway and upgrading of the bridge over National Route 14;
- Widening of John Vorster Drive between Verwoerd Avenue and Jean Avenue to form a dual carriageway for the entire length of John Vorster Drive.

Critical intersections that need to be upgraded include:

- Intersection John Vorster / Heuwel Road
- Intersection John Vorster / Lenchen Avenue North
- Intersection Gerhard Street / West Avenue
- Intersection Rabie Avenue / Jean Avenue
- The N14 Southbound Off Ramp onto West Avenue

Infrastructure Master Plans are being developed for Centurion and Hatfield and this section will be updated with the May adoption.

B3 BASIC INFRASTRUCTURE REVIEW

Basic infrastructure review as outlined in the Guidance Note should address current capacity of major infrastructure services, the demand projections, including unmet demand and future growth requirements. For this BEPP this section will be well-addressed for service infrastructure. It is a further requirement to address the asset condition, maintenance requirements for either refurbishment or replacement. Maintenance and refurbishment/replacement will be given focus in the development of the 2015/2016 BEPP. As Council has recently adopted the RSDFs 2014, it is essential that an Integrated Infrastructure Master Plan is modelled for future growth demand. We envisage that the relook at Infrastructure Master Planning will be modelled on the consideration of sustainability principles advocated for in Tshwane Vision 2055 towards a Resilient and Resource Efficient City, but will further be informed by the Growth Forecasting Assignment currently being commissioned by the CSIR. Sub-section B7 begins to focus on the city's efforts towards providing services in support of building a sustainable city.

B3.1 ENERGY AND ELECTRICITY PLANNING: OVERVIEW OF BULK ELECTRICITY INFRASTRUCTURE PROJECTS

1.1 INFEEED STATIONS

A request was issued to Eskom for quotations to upgrade the applicable in-feed stations. Table 10

NAME	START DATE	COMMISSIONING DATE	PROJECT COST	PROJECT DESCRIPTION
RIETVLEI	2011	2014 (Tender awardee to Siemens)	R 55mil	Upgrade from 125MVA to 250MVA
WILDEBEES	2011	2014 (Preparing to go out on tender)	R 40 mil	To Build the new Wildebees 400/132kV 250MVA (firm, stage 1) Infeed Station by 2014 and finally to a firm capacity of 750MVA (future).
NJALA	2007	2009	R 0	Upgrade from 500MVA to 750MVA
BUFFEL	Recently received a feasibility quote from Eskom			Infeed to be built to supply 100MVA by 2014 and finally to 500MVA in future.
HARTEBESPOORT	Waiting for Feasibility quote from Eskom			CoT applied for 190MVA in 2008, a) 50MVA @ 88kV New, b) 40MVA at 33kV Increases, c) 100MVA at 132kV – New

1.2 SUBSTATIONS (UPGRADES & RECONFIGURATION) – REGION 1 PROJECTS

REGION 1 SHORT AND MEDIUM TERM FORECASTING

Current substation projects

The average time taken from commencement to completion of primary projects is 3 years. This implies that projects to be completed in 2010/11 should have commenced during the 2008/09 financial years. The table below indicates the start and the required year of completion as well as the project cost. (Maps for this sub-section will be updated)

REGION 1 CURRENT PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST	LOCALITY OF PROJECT	BENEFITTING WARDS	PROJECT DESCRIPTION
ORCHARDS	2010	2013	R 46 mil	4	4,98	Upgrade from 35MVA to 120MVA
WOLMER	2010	2013	R 47 mil	98	2,96,98	Upgrade from 35MVA to 120MVA
K2	2011	2013	R 56 mil	37	32,39,90	New 40MVA 132/11kV Substation
K3	2011	2013	DoE (R68mil)	90	4,32,36,37,89	Install new 4 x 40MVA transformers at K3 substation. Dismantle the existing 2 x 20MVA transformers at K3 and install them at K1 substation.
K1	2011	2013	DoE (R42mil)	90	36,39,89,90	Utilise the 2x20MVA transformers from K3 and upgrade the substation from 20MVA to 60MVA.
REGION 1 FUTURE PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST			PROJECT DESCRIPTION
JJ	2013	2016	R 55mil	14	14	New 120MVA 132/11kV Substation. The land and servitude already exists.
STRYDFONTEIN	2017	2019	R 55mil	37	4, 30, 31, 32	New 80MVA 132/11kV Substation
RAMA CITY	2022	2024	R 55mil	4	7,31,32,37	New 120MVA 132/11kV Substation
SOSHANGUVE TO JJ 132KV LINE	2013	2016	R 83 mil	TSHWANE	TSHWANE	New 132kV powerline
BONNACORD SWITCHYARD	2020	2022	R 30 mil	96	2,49,50,90,98	New 132kV Switchyard

Table 11

(a) Electrification projects

NAME	PROJECT COST	WARD	# OF CONNECTIONS
RAMA CITY	R 36.7 mil	4	2040
GARANKUWA X10	R 59.4mil	32	3300
SOSHANGUVE X19	R 45.4 mil	37	2523
SOSHANGUVE X20	R 36 mil	37	2000
KOPANONG X2	R 21.6 mil	20	1200

Table 12

(b) Public Lighting projects financial year 2014-15

ITEM	REGION	WARDS	NO. HIGHMAST	COST ESTIMATE	NO. STREETLIGHTS	COST ESTIMATE	ASSIGNED TO REGION
1	1	11,19,25,35,36, 89	4	R 960,000.00	450	R 8,100,000.00	R 9,060,000.00

Table 13

REGION 2 SHORT AND MEDIUM TERM FORECASTING

Region 2 Current substation projects

REGION 2 CURRENT PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST	LOCALITY OF PROJECT	BENEFITTING WARDS	PROJECT DESCRIPTION
WONDERBOOM	2011	2013	R 37 mil	50	2,5,54,96	Upgrade from 35MVA to 105MVA
PTA NORTH	2010	2012	R 41 mil	50	1,2,96,98	Upgrade from 35MVA to 105MVA
REGION 2 FUTURE PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST	LOCALITY OF PROJECT	BENEFITTING WARDS	PROJECT DESCRIPTION
PYRAMID	2025	2027	R 40mil	96	49	Upgrade from 20MVA to 60MVA

Table 14

Region 2 Electrification projects

NAME	PROJECT COST	WARD	# OF CONNECTIONS
HAMMANSKRAAL WEST X3	R 57.6 mil	76	3202
HAMMANSKRAAL WEST X4	R 55.3 mil	76	3021
TEMBA X1	R 4.5 mil	76	250

Table 15

(a) Public Lighting projects financial year 2014-15

Table 16

ITEM	REGION	WARDS	NO. HIGHMAST	COST ESTIMATE	NO. STREETLIGHTS	COST ESTIMATE	ASSIGNED TO REGION
1	2	5,13,49,74, and 95	4	R 1,000,000.00	300	R 5,400,000.00	R 6,400,000.00

REGION 3 SHORT AND MEDIUM TERM FORECASTING

Region 3 Current substation projects

Table 17

REGION 3 CURRENT PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST	LOCALITY OF PROJECT	BENEFITTING WARDS	PROJECT DESCRIPTION
GOMSAND	2011	2013	R 34 mil	55	1,2,7	Upgrade from 35MVA to 105MVA
REGION 3 FUTURE PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST			PROJECT DESCRIPTION
HATFIELD	2020	2022	R 55mil	56	42,53,59,82,92	New 120MVA 132/11kV Substation
WILLOWS	2027	2029	R 50 mil	86	43,85	To be refurbished
TUNNEL	2015	2017	R 40 mil	58	1,55	Upgrade and extend the substation by adding the third transformer. Will keep the 100% back-up configuration.
ZEBRA	2019	2021	R 50mil	3	7,51	Upgrade from 70MVA to 105MVA
LOTUS	2020	2022	R 55mil	7	3,55,62,63	New 120MVA 132/11kV Substation
RIVER	2020	2022	R 60 mil	56	42,53,59,82,92	To be refurbished
MAYVILLE	2025	2027	R 50mil	1	2,53,54,58	Upgrade from 35MVA to 105MVA
VILLERIA	2025	2027	R 50mil	53	52,54	Upgrade from 35MVA to 105MVA
CAPITAL PARK	2025	2027	R 50mil	58	1,53,60,81	Upgrade from 70MVA to 105MVA
BOOM	2027	2029	R 30mil	60	58,59,80	Replace 20 MVA transformers and protection

ATTERIDGEVILLE	2025	2027	R 50mil	7	3,51,62,63	Upgrade from 70MVA to 105MVA
SAULSVILLE	2025	2027	R 50mil	7	3,51,62,63	Upgrade from 70MVA to 105MVA

Region 3 Electrification projects

Table 18

NAME	PROJECT COST	WARD	# OF CONNECTIONS
CLAREMONT	R 1.6 mil		90
DANVILLE ELANDSPOORT PHASE 2	R 36 mil		2000
DANVILLE INFILL SITE PHASE 1	R 7.2 mil		400

(a) Public Lighting projects financial year 2014-15

Table 19

Item	Region	Wards	No. Highmast	Cost Estimate	No. Streetlights	Cost Estimate	Assigned to region
1	3	7,55,60 and 66	12	R 2,400,000.00	200	R 3,600,000.00	R 6,000,000.00

REGION 4 SHORT AND MEDIUM TERM FORECASTING

Region 4 Current substation projects

Table 20 REGION 4 PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST	LOCALITY OF PROJECT	BENEFITTING WARDS	PROJECT DESCRIPTION
CLAUDIUS	2009	2010	R 35 mil	61	7,48,66,70,71,72	Upgrade from 20MVA to 105MVA
DE HOEWES	2009	2011	R 30 mil	98	2,96,98	Upgrade from 35MVA to 120MVA
WATERKLOOF	2009	2011	R 18 mil	65	46,47,57	Upgrade from 40MVA to 60MVA
OLIEVENHOUTBOSCH 132/11kV SUBSTATION	2008	2011	R 28 mil	48	64,70	Upgrade from 20 MVA to 60MVA
RIETVLEI 250MVA 400/132kV INFEED	2011	2014	R 55 mil	78	64,65,77,79	Upgrade from 125MVA to 250MVA
CORNWALL HILL	Jan 2011	Jun 2012	R 15 mil (for trfrs)	65	78,79,91	Upgrade from 40 MVA to 120MVA
REGION 4 FUTURE PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST			PROJECT DESCRIPTION
KLOOFSIG	2025	2027	R 40mil	57	66,79	Upgrade from 20MVA to 60MVA
ZWARTKOP	2025	2027	R 50mil	78	57,65,69	Upgrade from 35MVA to 105MVA
HENNOPS	2017	2019	R 55mil	78	64,65,77,79	New 120MVA 132/11kV Substation
LOUWLARDIA	2017	2019	R 55mil	64	69,77,78	New 120MVA 132/11kV Substation

BRAKFORTEIN-T SWITCHYARD	2015	2017	R 40 mil	77	70	New switchyard
ELDORAIGNE	2016	2018	R 30 mil	78	57,65,69	Upgrade from 40 MVA to 60MVA

Region 4 Electrification projects

NAME	PROJECT COST	WARD	# OF CONNECTIONS
OLIEVENHOUTBOSCH X28	R 1.9 mil	77	108
MOOIPLAATS	R 72 mil	61	4000

Table 21

(a) Public Lighting projects financial year 2014-15

ITEM	REGION	WARDS	NO. HIGHMAST	COST ESTIMATE	NO. STREETLIGHT S	COST ESTIMATE	ASSIGNED TO REGION
14	4	70,69,65	2	R 500,000.00	350	R 6,300,000.00	R 6,800,000.00

Table 22

REGION 5 AND 6 SHORT AND MEDIUM TERM FORECASTING

Region 5 and 6 projects

Table 23: Projects in region 5 and 6

Electricity Infrastructure Planning and design section is still in the process of studying the existing infrastructure in region 5 and 6. Some of the alternatives being considered include the construction of a new Infeed – station which will solve the capacity problems in that region. Most of the areas in this region are supplied by Eskom which is indicated with the orange colour in figure 5. The projects that have already been completed were the upgrading of the Rayton supply from 3.1MVA to 5.1 MVA. Electricity Infrastructure Planning and design section has also paid for the budget quote to upgrade capacity at Refilwe from 1MVA to 3MVA and we are still awaiting feedback from Eskom with regard to this increase in capacity.

Table 23

REGION 5 AND 6 PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST	LOCALITY OF PROJECT	BENEFITTING WARDS	PROJECT DESCRIPTION
WILDEBEES	2013	2016	R 180 mil	40	10,15,17,18,67,86	New 250 MVA Infeed
WILDEBEES LINES	2014	2018	R 200mil	TSHWANE	TSHWANE	New 132kV lines
REGION 5 AND 6 FUTURE PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST			PROJECT DESCRIPTION
MOOIPLAAS	2017	2019	R 55mil	101	85,91,40	New 120MVA substation
MAMELODI III	2011	2013	R 50 mil	16	6,10,15,17,18,23,40	Upgrade from 40MVA to 120MVA

Region 5 & 6 Electrification projects

Table 24

NAME	PROJECT COST	WARD	# OF CONNECTIONS
REFILWE MANOR	R 17.6 mil	99/100	980
REFILWE X10	R 16.2	99	900
DONKERHOEK	R18 mil	99	1000
ELANDSHOEK	R9 mil	100	500
REFILWE Ext 5	R13 mil	100	700
DEWANDRIFT	R18 mil	100	1000
KAMEELDRIFT	R18 mil	100	1000
NELLMAPIUS EXT 24	R48 mil	40	2700
NELLMAPIUS EXT 1	R21.6 mil	40	1200
NELLMAPIUS EXT 6	R1.9 mil	40	106
MAHUBE VALLEY EXT 2	R2.8 mil	17	156
MAHUBE VALLEY EXT 15	R37.8mil	99	2100
MAMELODI EXT 6	R54 mil	40	3000
PIENAARSPPOORT	R8.1 mil	99	450
REEFILWE X7	R 15.3 mil	99	850

(a) Public Lighting projects financial year 2014-15

ITEM	REGION	WARDS	NO. HIGHMAST	COST ESTIMATE	NO. STREETLIGHTS	COST ESTIMATE	ASSIGNED TO REGION
1	5	99,100	2	R 480,000.00	150	R 2,700,000.00	R 3,180,000.00
2	6	15,16,23,86,50, 101	2	R 480,000.00	300	R 5,400,000.00	R 5,880,000.00

Table 25

REGION 7 SHORT AND MEDIUM TERM FORECASTING

Region 7 projects

Table 26: Projects in region 7

Electricity Infrastructure Planning and design section is still in the process of studying the existing infrastructure in region 7. Most of the areas in this region are supplied by Eskom while the City of Tshwane is supplying the rest. The projects that have already been completed were the upgrading of the Tribor capacity from 30MVA to 60 MVA and the upgrading of Rethabiseng capacity from 1MVA to 3 MVA.

Table 26

REGION 7 PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST	LOCALITY OF PROJECT	BENEFITTING WARDS	PROJECT DESCRIPTION
CATHY	2013	2016	R 38 mil	102	100,103,105	Upgrade from 40MVA to 60 MVA

Region 7 Electrification projects

NAME	PROJECT COST	WARD	# OF CONNECTIONS
ZITHOBENI X8	R 15.5 mil	102	860
ZITHOBENI X9	R 7.1 mil	102	950

Table 27

(a) Public Lighting projects financial year 2014-15

Table 28

ITEM	REGION	WARDS	NO. HIGHMAST	COST ESTIMATE	NO. STREETLIGHTS	COST ESTIMATE	ASSIGNED TO REGION
1	7	102,103,104,105	2	R 480,000.00	350	R 6,300,000.00	R 6,780,000.00

MADIBENG SHORT AND MEDIUM TERM FORECASTING

Madibeng projects (Hartebeespoort dam area)

The Hartebeespoort/Fortsig primary network is situated in the western part of City of Tshwane. The primary network supplies area surrounding Hartebeespoort dam which includes developments such as Peacanwood, Ville de Afrique, Meerhof, etc.

The Hartbeespoort network is a 33kV network which operates on an island separate of the Tshwane network and has an Eskom connection at Hartbeespoort Infeed-station of 88/33kV with a firm capacity of 40MVA. The 33kV system operates on a radial ring system which supplies the following substations:

- Ifafi substation 30MVA capacity (firm 15MVA)
- Flora Park substation 5MVA capacity (unfirm)
- Swartspuit substation 5MVA capacity (unfirm)
- Broederstroom substation 15MVA capacity (firm)
- Gerotek substation 5MVA capacity (unfirm)
- Zilkaatsnek substation 5MVA capacity (unfirm)
- Schietfontein substation 5MVA capacity (unfirm)
- Yskor substation 1MVA capacity (unfirm)
- PMP substation 15MVA capacity (firm)

MADIBENG PROJECTS						
NAME	PROGRESS		CHALLENGES	LOCALITY OF PROJECT		PROJECT DESCRIPTION
CoT applied for 190MVA in 2008, a) 50MVA @ 88kV New, b) 40MVA at 33kV Increases, c) 100MVA at 132kV - New	Eskom to provide interim 20MVA @ 88 kV which is in process		CoT still waiting for feasibility quote from Eskom for other applications.	MADIBENG		Upgrading of the Hartebeespoort network
MADIBENG FUTURE PROJECTS						
NAME	START DATE	COMM. DATE	PROJECT COST			PROJECT DESCRIPTION
SANDSPRUIT	2022	2024	R 30mil	MADIBENG	MADIBENG	New 33/11Kv 40MVA substation
CROCODILE	2027	2029	R 55 mil	MADIBENG	MADIBENG	New 132/11Kv 120MVA substation

Table 29

The Hartebeespoort network is old and is operating at firm capacity at Hartebeespoort Infeed-station.

The existing 33kV network was designed to supply rural areas. Subsequently the area has become an urban development, especially the areas surrounding the dam, which result in that the network is no longer sufficient on 33kV and needs to be upgraded to 88kV with the option to later convert to 132kV.

Expansion of Tshwane Hartebeespoort network to solve load problems:

The City of Tshwane has applied for the following connections at Eskom to ensure firm supply for the Hartebeespoort network:

- 33kV 80MVA (firm) at Hartebeespoort Infeed Station. This will supply the Northern Hartebeespoort dam supply area: Zilkaatsnek, Sandspruit, Schietfontein, PMP, Yskor and Swartspruit 33/11kV substations.
- 88kV 50MVA (firm) at Hartebeespoort Infeed Station. This will supply the mid Hartebeespoort dam supply area: Ifafi and new Hartebeespoort 88/11kV substations.
- 132kV 100MVA (firm) at Anderson/Summerhill/Lomond Infeed Station. This will supply the southern Hartebeespoort dam supply area: Broederstroom, new Crocodile and Florapark 132/11kV substations.

The challenges that City of Tshwane is faced with is the capacity constraints from Eskom. Eskom indicated that CoT will only be able to get the requested capacity in 2016

Servitudes and Sites

The following powerline servitudes and substation sites must be acquired as they form part of the Masterplan alternatives, and the sooner it is acquired the cheaper the cost will be.

Power line name	Predecessor	Status/progress	Acquisition target date	Construction date
Rietvlei – Waterkloof		Report underway	30-Jun-13	
Brakfontein - Kosmosdal		Alternatives investigation	30-Jun-14	
Haartebeespoort power lines	Basic EIA	Alternatives investigation	30-Jun-14	
Attredgeville - Broederstroom	Resolution CoT/Madibeng supply responsibility		30-Jun-14	
Highland - Scientia/Eland	Secondary section input on planning	Alternatives investigation	30-Jun-14	
Brakfontein - Mnandi/Monavoni	Secondary section input on planning	Alternatives investigation	30-Jun-14	
Louwlandia power line	Secondary section input on planning	Alternatives investigation	30-Jun-14	
K3 – Strydfontein	Basic EIA & Secondary section input on location	Alternatives investigation	30-Jun-14	
Strydfontein - Rama City	Basic EIA	Alternatives investigation	30-Jun-14	
Soshanguve - Sosh VV	Secondary section input on planning	Alternatives investigation	30-Jun-14	
Wilbebees – Mooiplaas	EIA- on going	EIA in process	30-Jun-14	
Wilbebees – Tau	Basic EIA	Alternatives investigation	30-Jun-14	
Eland – Hatfield		Alternatives investigation	30-Jun-14	
Doornpoort T - Rodeplaat	Basic EIA	Alternatives investigation	30-Jun-14	
Rodeplaat - Tau	Basic EIA	Alternatives investigation	30-Jun-14	

Table 30

ELECTRICAL NETWORK DEVELOPMENT

1.5 GENERAL

- Overview of network
- Development of transmission system
- Discuss future infeed points
- Development of primary substation
- Discuss reconfiguration
- Development of satellite substations
- Technical alternatives considered

INFEED STATIONS & LOAD GROWTH

This section of the Masterplan report indicates the result of the load-forecast model for all the Infeed stations.

INFEED STATION (IS)	METERING kV	FIRM INSTALLED CAPACITY (MVA)	95% of FIC (MVA)	BACK-UP (RESERVE) MVA	WINTER LOAD 2011 (MVA)	WINTER LOAD 2012 (MVA)
Kwagga IS	275	900	855	300	901	875
Njala IS	275	750	713	250	702	789
Rietvlei IS	132	125	119	125	169	174
Buffel IS	132	40	40 (100% Loading)	Eskom	38	40
Hartebees IS	88	40	38	Eskom	40	41
TOTAL LOAD		1855	1765	675	1850	1919

Table 31

B3.2 BASIC INFRASTRUCTURE: WATER AND SANITATION INFRASTRUCTURE

-Sanitation backlogs are quantified at 38 760 units for 2014/2015 – This figure will be updated as per completed projects for 14/15;

-These are reported to be priority for eradication during the current financial year.

Water and Sanitation

1 CURRENT WATER SOURCES AND DEMAND

The CoT currently has an average potable water demand of 987 Ml/d. Approximately 72% of the demand is supplied by Rand Water Board, the water source being the Vaal River. Most of the rest is generated internally by CoT's own fountains, springs, boreholes and Water Treatment Plants (WTP),

of which Rietvlei WTP (40 MI/d), Roodeplaat WTP (60 MI/d), Bronkhorstspuit (54 MI/d) and Temba WTP (60 MI/d) are the largest. Magalies Water Board (MW) also owns and operates three WTP's which supply CoT, namely Klipdrift WTP (18 MI/d), Wallmannsthal WTP (12 MI/d) and Cullinan WTP (16 MI/d).

2 CURRENT WASTE WATER TREATMENT WORKS AND SEWER FLOW

The CoT straddles the water divide between the Crocodile River basin in the west, and the Olifants River basin in the east. Approximately 505 MI/d is discharged into the rivers as purified effluent returns. Of this 96% or 485 MI/d ends up in the Crocodile River basin, and only 4% or 20 MI/d in the Olifants River basin.

The main CoT Waste Water Treatment Works (WWTW) discharging in the Crocodile River basin are Sunderland Ridge (95 MI/d), Baviaanspoort (60 MI/d), Zeekoegat (30 MI/d), Daspoort (60 MI/d), Rooiwal (245 MI/d), Temba (12 MI/d), Rietgat (27 MI/d), Sandspruit (20 MI/d) and Klipgat (55 MI/d).

In addition, ERWAT's Olifantsfontein (105 MI/d) and Hartbeesfontein (45 MI/d) WWTW's also discharge Ekurhuleni's sewer flow into the Crocodile River basin upstream of CoT.

The main CoT WWTW's discharging in the Olifants River basin are Cullinan (2 MI/d), Refilwe (2 MI/d), Rayton (1 MI/d), Godrich (5 MI/d) and two maturation pond systems serving Ekangala.

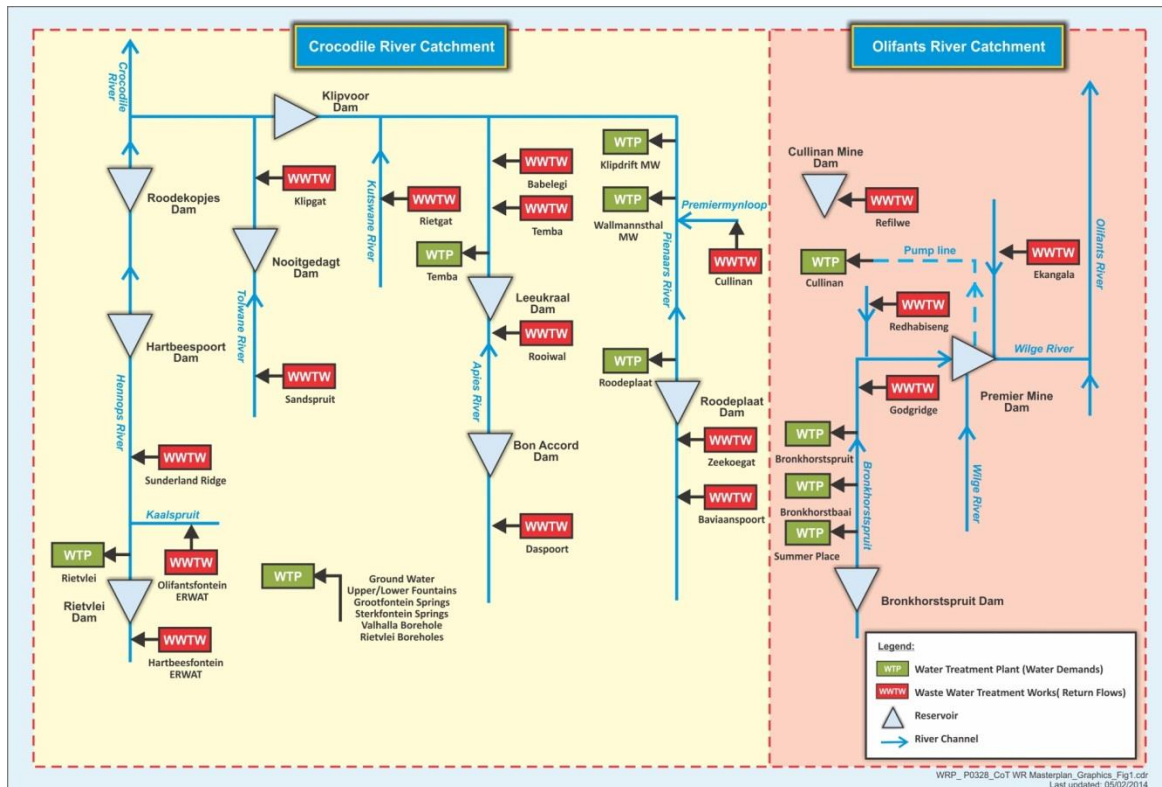


Figure 10

3 WATER RESOURCE SITUATION

CoT finds itself in an interesting conundrum concerning its potable water resources. On the one hand the DWA's Vaal River Reconciliation study requires its main customers to reduce its growth in demand due to a shortage in yield of the Vaal River system, which will only be resolved by ± 2021 when the second phase of the Lesotho Highlands Water Project (Polihale dam) is implemented. On the other hand, increases in CoT's sewer return flows into the Crocodile River basin are important from a perspective of generating sufficient yield to enable water supply to proposed Eskom coal fired power plants in Lephalale via the Mokolo Crocodile Water Augmentation Project (MCWAP). Developing or extending CoT's own water resources will reduce the import from and load on the Vaal River system, but will decrease the sewer return flows which are required for the Eskom/Lephalale supply.

The local water resource yields of the Crocodile River and Olifants River tributaries which are the sources of the main CoT and Magalies Water Board's WTP's are all very much dependant on the above sewer return flows (with Bronkhorstspuit WTP and Cullinan WTP being notable exceptions).

In the Olifants River basin all DWA allocated licences for water abstraction are already being exceeded, and water is imported from the Vaal River via a 30 ML/d pumping scheme that delivers water into the Ekandustria reservoirs, for on-supply to Thembisile.

B3 BASIC INFRASTRUCTURE REVIEW

1. FUTURE WATER DEMAND AND SEWER FLOWS

In accordance with the CoT current water and sewer Master Plan, which was based on the MSDP 2008, the CoT potable water demand is set to increase over the next 40 to 50 years to 2600 MI/d, with concomitant increase in sewer return flows to 1600 MI/d.

The anticipated future water demands and sewer return flows will require a growth rate of $\pm 2\%$ p.a. (within CoT) which is not altogether unrealistic, given historical statistics. There are however a few very large areas where growth may or may not realise as anticipated. These needs may have a significant effect on sewer return flows and therefore the water resource availability at certain points in the Crocodile and Olifants River basins:

- R21 Corridor (extends into Ekurhuleni)
- Western Centurion
- East of Silver Lakes
- Doornpoort (north of Montana)
- Kameeldrift/Derdepoort area (southwest of Roodeplaat dam)
- Area southeast of Soshanguve
- South of Temba

2. WATER RESOURCE AVAILABILITY AND OPTIONS TO EXPAND COT WTP'S

The water resource analyses and analyses of CoT's WTP extension options area as follows:

- Rietvlei WTP can be extended over time from 40 MI/d to 140 MI/d
- With additional transfer flow from Olifantsfontein WWTW Rietvlei WTP can be extended from existing 40 MI/d to 240 MI/d over time
- Roodeplaat WTP can be extended from existing 60 MI/d to 240 MI/d over time
- Extension of Wallmannsthal WTP should not be considered in the light of the possible much larger extension of the Roodeplaat WTP
- There is sufficient water resource available to extend the Temba WTP from existing 60 MI/d to 180 MI/d (serving an AADD of 129 MI/d as required by the SDF based MP – which includes southern Moretele)

- There is no additional water resource available to extend the capacity of the 16 MI/d Cullinan WTP, and augmentation from other water resources (e.g. RW) will be required to serve the SDF based MP AADD of 38 MI/d)
- There is no additional water resource available to extend the capacity of the 54 MI/d Bronkhorstspuit WTP, and augmentation from other water resources (e.g. RW on top of existing 30 MI/d scheme) will be required to serve the SDF based MP AADD of 140 MI/d – which includes southern Thembisile)
- The required extension of the Bronkhorstbaai WTP to 5,5 MI/d capacity in order to serve the SDF based MP AADD of 4,2 MI/d for resorts around the dam is small enough to be accommodated and may be countered by slight additional augmentation into the Bronkhorstspuit/Ekangala system.

1. SEWER RETICULATION AND WASTE WATER TREATMENT WORKS MASTER PLAN

The following extensions to the main WWTWs are foreseen in the sewer reticulation Master Plan:

Crocodile River basin:

- Sunderland Ridge WWTW (95 MI/d to be extended to 209 MI/d)
- Schurveberg WWTW (proposed WWTW with 55 MI/d capacity)
- Baviaanspoort WWTW (60 MI/d to be extended to 305 MI/d)
- Zeekoegat WWTW (30 MI/d to be extended to 161 MI/d)
- Daspoort WWTW (60 MI/d)
- Rooiwal WWTW (245 MI/d to be extended to 492 MI/d)
- Temba WWTW (12 MI/d to be extended to 33 MI/d + additional 87 MI/d)
- Rietgat WWTW (27 MI/d to be extended to 119 MI/d)
- Sandspruit WWTW (20 MI/d to be extended to 60 MI/d)
- Klipgat WWTW (55 MI/d to be extended to 91 MI/d)
- ERWAT Olifantsfontein WWTW (105 MI/d to be extended to 157 MI/d)
- ERWAT Hartbeesfontein WWTW (45 MI/d)
- ERWAT Rietvlei WWTW (proposed WWTW with 193 MI/d capacity)

Olifants River basin:

- Lewzene WWTW (proposed with 11 MI/d capacity, replacing Cullinan and Refilwe WWTWs)
- Rayton WWTW (1 MI/d to be extended to 12 MI/d)
- Godrich WWTW (5 MI/d to be extended to 36 MI/d)
- Ekangala WWTW (proposed with 20 MI/d capacity, replacing existing maturation ponds)

Capex Requirements: Bulk Water (in R million)Table 32

Year	Rietvlei Bulk Distribution	Rietvlei WTP	Roodeplaat Bulk Distribution	Roodeplaat WTP	Temba WTP	BHBaai WTP	Cullinan/BHS Bulk Supply	Totals
2014								
2015			R 166.5	R 172.8			R 259.1	R 598.4
2016					R 543.7	R 20.5		R 564.2
2017								
2018								
2019								
2020	R 222.2	R 945.9					R 194.3	R 1 362.4
2021								
2022								
2023			R 1.6				R 1.2	R 2.8
2024								
2025				R 465.6				R 465.6
2026								
2027			R 121.8					R 121.8
2028								
2029								
2030			R 21.4			R 13.3		R 34.8
2031								
2032								
2033								
2034							R 297.2	R 297.2

2035	R 125.0	R 308.2	R 139.0	R 287.9	R 202.6			R 1 062.6
2036								
2037								
2038								
2039			R 3.2					R 3.2
2040								
2041								
2042							R 1.2	R 1.2
2043								
2044								
2045	R 2.0	R 287.9		R 306.3	R 199.8	R 9.6		R 805.7
2046								
2047								
2048								
2049								
2050			R 2.0					R 2.0
2051								
2052								
2053			R 60.9					R 60.9
2054								
2055								
TOTALS	R 349.2	R 1 542.0	R 516.3	R 1 232.6	R 946.1	R 43.4	R 753.0	R 5 382.6

Capex Requirements: Bulk Sanitation (in R million) Table 33

Project Description	Cost	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29
General replacement and upgrade all works	244	21	10	10	13	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Sunderland Ridge WWTW (2) Add 30MI/d BNR, Sludge facility	35	34	0	1															
Sunderland Ridge WWTW (3) Add 30MI/d BNR	362						2	40	125	125	70								
Zeekoegat WWTW (1) 50MI/day BNR, Sludge facility	356	90	84	82	100														
Zeekoegat WWTW (2) add 40MI/day BNR	482										2	80	100	150	150				
Klipgat WWTW Restore 11 MI/d BTF, sludge facility, Anaerobic Digester refurbishment	49				10	39													
Klipgat WWTW Add 20MI/d BNR	240								1	9	40	100	90						
Rooiwal (East) WWTW Replace 55 MI/d BTF with 40MI/d BNR with external nitrification	482									2	80	100	150	150					
Rooiwal (North) WWTW Add 80MI/d BNR (1), Sludge facility extension	937	10	86	200	281	275	85												
Rooiwal (North) WWTW Add 50MI/d BNR (2)	590					1	20	100	180	180	109								
Rooiwal (North) WWTW Add 50MI/d BNR (3)	611												1	20	100	180	180	130	
New Hennops River WWTW 50MI/d BNR	612	1	11	15					10	75	200	200	100						
Baviaanspoort WWTW New 20MI/day BNR module (1), sludge facility, link outfall sewer	300			5	50	55	80	100	10										
Baviaanspoort WWTW Add 20MI/day BNR module (2)	260														5	50	80	80	45
Rietgat WWTW Re-commission unused 7MI/d BNR	2		1	1															
Rietgat WWTW Add 20MI/d BNR, Anaerobic Digestors, Sludge facility	248				1	7	60	100	80										
Upgrade existing Sandspruit WWTW for higher nutrient loading (Phase 1),	83		21	21	21	21													

Sludge facility																			
Sandspruit WWTW (Phase 2) Add 10ML/d BNR	126						6	30	60	30									
Sandspruit WWTW (Phase 2) Add 10ML/d BNR	126															6	30	60	30
Upgrade existing Temba WWTW & PS (Phase 1) & Babelegi WWTW	285	62	108	54	60														
Ekangala 10ML/day	74		45	14	15														
Godrich sludge facility new 10 ML/day BNR module	129			1	3	20	80	25											
Cullinan/Refilwe new 10ML/day module	110			1	9	40	50	10											
Total Budget	6 742	218	366	405	562	468	393	415	476	431	511	490	451	330	265	246	300	280	85

Backlogs Estimation: (To be updated as per completed projects for 14_15 in the revised BEPP)

Roads and storm-water backlogs for provision of basic services are estimated at approximately R13b. The table below further illustrates the breakdown per region. For the review of this document it would be valuable to further breakdown the backlogs into specific townships of implementation spatially referenced for each region. The roads and storm-water backlogs in informal settlements will be addressed under this section “Informal Settlements”, but the information is still pending.

Area	Backlog (km)	Estimate (R5.0million per km)
Region 1	883	R 4 .4 billion
Region 2	983	R 5 billion
Region 3	74	370 million
Region 4	120	R 600 million
Region 5	320	R 1,6 billion
Region 6	48	R 200 million
Region 7	355	R 1,5 billion
Total	2720.0	R 13, 60 billion
These figures exclude backlogs in informal settlements		

Table 34

Storm-water Backlogs: (To be updated as per completed 14/15 projects in the revised BEPP)

From the table below the impression is that there are no backlogs in Regions 4 and 5. Verification will done with the third review Table 34

STORMWATER BACKLOG PER REGION	ESTIMATED VALUE (R)	LENGTH OF NETWORKS (km)
Region 1	5 197 350 000	758
Region 2	3 355 770 000	271
Region 3	191 510 000	15
Region 4	-	-
Region 5	-	-
Region 6	1 389 360 000	187
Region7	586 880 000	80

STORMWATER BACKLOG PER REGION	ESTIMATED VALUE (R)	LENGTH OF NETWORKS (km)
Total Backlog	10 720 870 000	1312

Table 35

ROADS FOR GROWTH

It should be noted that some of these projects are at the planning stage and not yet approved by the Mayoral Committee.

a) Roads for growth

Top 10 projects, ranked through a formal system attending to 13 criteria, are listed in the table below.

Table 36: Roads for Growth

NR	PROJECT NAME	SECTION TO BE CONSTRUCTED/UPGRADED			COST (2011 RAND)
		DESCRIPTION	FROM	TO	
1	Lavender Road (R101)	Upgrade of the intersection and 2 nd bridge over the Apies River	Rachel de Beer	Lavender	R80,000,000
2	Solomon Mahlangu Drive	2 nd carriageway between R21 and Waterkloof High School (including bridge across the N1)	R21	Boeing Road	R 40 200 000
3	Pretoria Road	New link between Silverton and Hatfield replacing the old bridge across the railway line	N1 Freeway	Kilnerton Road	R 50 000 000
4	Derdepoort Road	1 st Carriageway between East Lynne and Eersterust (including bridge across the Moreleta Spruit)	Baviaanspoort Rd	Stormvoël Road	R 55 586 000
5	Louis de Vaal I/C upgrade (link to Flower)	Extend van Heerden St across Apies River and convert section of Van Heerden and Flowers to a 1-way system	DF Malan Drive	Flowers Street	R 30 200 000
6	Garsfontein Road	New dual carriageway between Anton van Wouw Street and Solomon Mahlangu Drive	Anton van Wouw	Solomon Mahlangu Drive	R 42 200 000
7	Lenchen Avenue	2 nd carriageway from	John Vorster	Jakaranda Street	R 49 300 000

NR	PROJECT NAME	SECTION TO BE CONSTRUCTED/UPGRADED			COST
		Old Jhb Road across the N14 to John Vorster Drive (including bridge)	Drive		
8	Lynwood Road	New dual carriageway between The Grove Mall and Solomon Mahlangu Drive	Meadow Avenue	Solomon Mahlangu Drive	R 47 000 000
9	Stormvoél Road (M8)	2 nd Carriageway between Eersterust and Mamelodi	Hans Coverdale West	Maphella Drive	R 34 000 000
10	Nico Smith Street	2 nd Carriageway from Stead Avenue to the Hardy Muller traffic circle plus Nico Smith (Michael Brink)/ Terblanche St one-way	Stead Avenue	CR Swart Drive	R 25 836 000
					R 454 322 000

b) Intersection Upgrades

Intersections experiencing congestion have been investigated and upgrading or adjustments identified. They are listed, not in any priority order. These projects are under responsibility of the Section Traffic Engineering and Operations.

Table 37. Intersection Upgrades

Item	INTERSECTION		Estimated cost of upgrade (2011 Rand)
	Major Road	Minor Road	
1	Ruimte Rd (K52)	Willem Botha St	R 2,660,000
2	Nellmapius Dr (K54)	Main Rd	R 2,670,000
3	Rooihuiskraal Rd	Panorama Rd	R 7,660,000
4	Walker St	Mears St	R 2,380,000
5	Ruimte Rd (K52)	Rooihuiskraal Rd	R 2,180,000
6	M17 (K217)	Access Road to Soshanguve Block TT	R 960,000
7	Jean Ave	Rabie St	R 1,480,000
8	Old Jhb Rd (K101)	Wierda Rd (K103)	R 5,610,000
9	R80 Eastbound	DF Malan Dr	R 6,650,000
10	Codonia St	Cunningham St	R 2,400,000
11	Dr Swanepoel Rd (K99)	Amandelboom Ave	R 3,520,000
12	Stormvoel Rd	Hans Coverdale Rd (East)	R 1,860,000

Item	INTERSECTION		Estimated cost of upgrade (2011 Rand)
	Major Road	Minor Road	
13	M20 (K63)	Hebron Rd (K216)	R 1,670,000
14	Atterbury Rd (K40)	De Villebois Mareuil Dr	R 2,830,000
15	Dely Rd	Matroosberg Rd	R 1,910,000
16	Daan De Wet Nel Dr	Willem Cruywagen St	R 2,200,000
17	Motlotlegi Rd	Pilane St	R 2,420,000
18	Dykor St	Moreleta St	R 2,280,000
19	Old Warmbaths Rd (K101)	Douglas Rens Rd	R 2,640,000
20	Hornsnek Rd (M17)	Van der Hoff St (K20)	R 1,640,000
21	Rigel Ave	Eridanus St	R 2,180,000
22	Ruimte Rd (K52)	Chris Hougaard Street	R 2,110,000
23	Buitekant Street	Monola St	R 900,000
24	Rachel de Beer St (K14)	Daan de Wet Nel Dr	R 2,410,000
25	Church St	Tlou St	R 1,060,000
26	Wierda Rd (K103)	Ashwood Drive	R 1,580,000
27	Van der Hoff St (K20)	Hendriks St	R 2,200,000
28	Petroleum St	Alwyn St	R 2,550,000
29	Petroleum St	Maggs St	R 1,620,000
30	Dely Rd	Club Ave	R 3,240,000
31	Church St	Masopha St	R 2,350,000
TOTAL COST:			R 79,820,000

c) Mega Projects

NB: These are not municipal roads projects but provincial routes, and are thus identified for the significance in the network. They require partnership, perhaps also at National level. Also due to their very high cost in terms, especially compared to Departmental budget, are not indicated as possible for the budget. This section just gives very important links that will benefit the City even though it will mostly probably be funded by National or Provincial Government.

Table38: Mega Projects

Nr	Region	Name	Description	From	To	Length (km)	Estimated construction cost
1	1 (North West)	Western Bypass (PWV9)	New Western Bypass dual carriageway through the Magaliesberg	R 80	N14	26	R 3,805,000,000 (R3.84 billion)
2	2 (North East)	Sefako Makgatho Drive (old Zambesi) / Rachel de Beer link:	New Sefako Makgatho Drive (old Zambesi) / Rachel de Beer single carriageway + links(1st phase) across the Apies River at Rainbow Junction	M1 (at Rachel de Beer)	Lavender (K97)	1.4	R 567,280,000
3	2 (North East)	K99 (Dr Swanepoel Rd):	New single carriageway tunnel link through Magaliesberg:	Sefako Makgatho (old Zambesi Drive)	Frates Road	2.55	R 682,000,000
4	6 (East/South-East)	K54	First carriageway between the R21 and the N4 (section of PWV 17 included)	R 21	PWV 17	22.5	To be determined still <i>(At an estimate of R80m per km, R1.8 billion)</i>
TOTAL (Estimate)							R 6.85 billion

BULK INFRASTRUCTURE NEEDS TO SUPPORT REGIONAL SPATIAL DEVELOPMENT FRAMEWORK

REGION 1

Insufficient water supply has been identified in the areas listed below.

- Soshanguve SS Ext 2
- Pretoria North
- Heatherdale Agricultural Holdings
- Soshanguve East
- Mabopane X
- Mabopane M
- Mabopane U
- Soshanguve G
- Soshanguve VV

REGION 2

THE ZONE OF CHOICE:

The Zone of Choice is a strategic investment area located immediately north of the Capital Core.

- Zone of Choice Local Spatial Development Framework has indicated engineering infrastructural status and needs of the southern parts of Region 2, this information can be accessed on the following link:
- There is a great need of engineering infrastructure development and improvement for the far north townships that are affected by informality of settlements, poor roads, tribal land issues, access to water, electricity and sanitation. Although the need is identifiable currently it cannot be quantified. The Water and Sanitation

reports have been attached as Annexure B and C providing current IDP projects localities as well as future infrastructure expansion areas. The refinement of this preliminary BEPP will allow internal stakeholder consultation especially between the relationship of land use planning/spatial planning vs infrastructure planning and implementation.

REGION 3

Region 3 has no serious challenges or the shortage of infrastructure capacity currently except for the Hatfield and Salvokop Metropolitan Nodes that are expected to redevelop due to their strategic location to the Gautrain Stations, Knowledge Economy (for Hatfield) and linkage to the TRT network. Salvokop is earmarked for future mixed uses such as offices and retail uses. An Infrastructure Master Plan for Hatfield which is currently being developed to determine the extent of the services required to accommodate a mixed-use high-density node primarily supported by a public transport system. The Inner City Revitalisation Programme has prioritized for National Government (*an initiative of the National Department of Public Works*) a Government Precinct in suitable localities in the CBD. With this the requirement will be to determine socio-economic infrastructure capacity for such developments.

REGION 4

- **Monavoni / Mnandi** - sewerage capacity problem between Sunderland Ridge station and the Vlakplaats area to the west (within the urban edge). North / south water shedding requires split in sewerage off-flow between these areas.
- **Doringkloof** - sewerage capacity problem. Sewerage needs to be pumped to Sunderland Ridge and these facilities must be upgraded or alternative measures towards the south needs to be investigated and developed. To our knowledge the former Kungwini Municipality did not develop any facilities and this seems problematic for future planning.
- **Monumentpark** - water capacity problem. Reservoir needs to be upgraded and will resolve the issue.

Further to the above it should be noted that capacity problems may exist within current development areas or new townships. Consultation with Infrastructure Department will provide in-depth information in respect of associated needs.

Erasmia / Christoburg – water capacity problem. New reservoir needs to be built for future developments within the node and surrounding areas.

REGION 5

- Engineering services are required to support further development whether in terms of new business rights or densification in Roodeplaat, Kameeldrift, Derdepoort, Zeekoegat, Kameelfontein, Rietfontein, Nooitgedacht, Boekenhoutkloof,

Tweefontein, Donkerhoek, Kafferskraal, Mooiplaats, Leeuwfontein and Krokospuit farm areas.

- Cullinan, Raeton and Refilwe require infrastructure upgrades.

REGION 6

Some corridors along the TRT the current density will change from 10 / ha to 200 /ha. Services will have to be upgraded in these corridors. At this stage our Region does not have any specific applications in the Services Departments have indicated that services are not available but it is expected that it will soon be the case especially in the nodal and corridor areas.

The Urban Edge areas where limited services are available no further densification will be supported until services are upgraded; an example is areas such as the farm Zwavelpoort 373-jr, where the existing road is not designed for the proposed densification.

REGION 7

Currently there is no information on engineering infrastructure. However, the city is busy with the development of the New City in the East Masterplan which will indicate the status and need of engineering infrastructure for only the study areas (Bronkhorstbaai areas, Bronkhorstspuit and Zithobeni, Ekangala, Ekandustria and Rethabiseng).

B4: RESIDENTIAL INFRASTRUCTURE: MANAGEMENT OF INFORMAL SETTLEMENTS

-The Sustainable Human Development Strategy and the Informal Settlement Upgrade Plan would have to begin to respond to Tshwane 2055, MSDF 2012 and the RSDFs 2014 in context. For the purposes of this sub-section the discussion is per Draft SHSPP 2014.

The City of Tshwane has produced a Sustainable Human Settlement Plan for its area of jurisdiction to ensure that it meets the constitutional obligation of ensuring that its residents have proper access to sustainable housing solutions.

The primary objective of this initiative is thus to put together a Sustainable Human Settlement Plan that will assist the City of Tshwane in achieving the very important “step 1” of providing a sound strategic context to the issue of housing supply and demand, before getting to the specific objectives pertaining to the provision of turnkey solutions for rental housing, integrated mixed housing typology solutions, eradication of informal settlements/back yard shacks, etc.

Objectives and Outcomes Table 39

SHSP Objectives	SHSP Outcomes	Points of Departure
To develop a comprehensive housing development and delivery plan for municipalities in Gauteng Province providing strategic direction and guidance to the municipalities as to key housing delivery priorities and focus in terms of housing delivery in the Province.	To develop a single shared vision and housing delivery plan between various spheres of government role-players and stakeholders for the local municipality.	Provide strategic direction and guidance in terms of a single housing delivery plan for the local municipality.
To integrate the SHSP's into the Municipal Integrated Development Plans, and ensure that the SHSP becomes the housing component of the IDP.	<ul style="list-style-type: none"> • Ensure integration of the Housing Delivery process with Provincial Departments and Local Authority initiatives. • Ensure an understanding of and address the constraints within which Housing Delivery takes place at a Municipal Level. • Supplement the IDP sector plans. 	<ul style="list-style-type: none"> • Provide for a single shared housing vision for the City of Tshwane. • Ensure political and policy alignment. • Establish a common understanding of housing delivery challenges and constraints.
To ensure that the SHSP's provide a consistent tool to evaluate proposals and applications at both a provincial and municipal level, through the development of a GIS based support system.	Provide a user friendly and accessible tool to all authorised users to manage and monitor housing delivery in the local municipality.	Explore and recommend tools to monitor and evaluate housing delivery on a Provincial and Municipal scale.
To establish a framework for housing delivery in terms of the National Housing Program and GDoH Strategic Direction.	Ensure policy alignment at a National, Provincial and a Local level.	Ensure sustainable and spatially integrated housing delivery.
To provide both GDoH and municipalities with a tool to strategically locate future housing settlements, taking into consideration the constraints and opportunities that exist at a municipal level.	Ensure the establishment of sustainable housing development and spatial integration and adherence to DFA Principles.	Ensure relevance and effectiveness of housing delivery programs and products.
To identify key issues to be addressed.	<p>Lessons Learnt and best practices with regard to housing delivery in the Province.</p> <p>Assess effectiveness of Departmental programs and products delivery.</p>	Provide a framework for incorporation of the SHSP's into the IDP Reviews in the form of an IDP Housing Chapter.

Historical Context and trends in Housing Demand

Since 1994 the Government of South Africa has done a lot for the remediation of the distorted spatial patterns inherited from the Apartheid era, and for the improvement of the living conditions of our previously disadvantaged compatriots, and all of the positive reports provide proof for the latter. This chapter offers an insight on what should be done from a town planning and urban design perspective in order to transform the previously disadvantaged areas into sustainable human settlements.

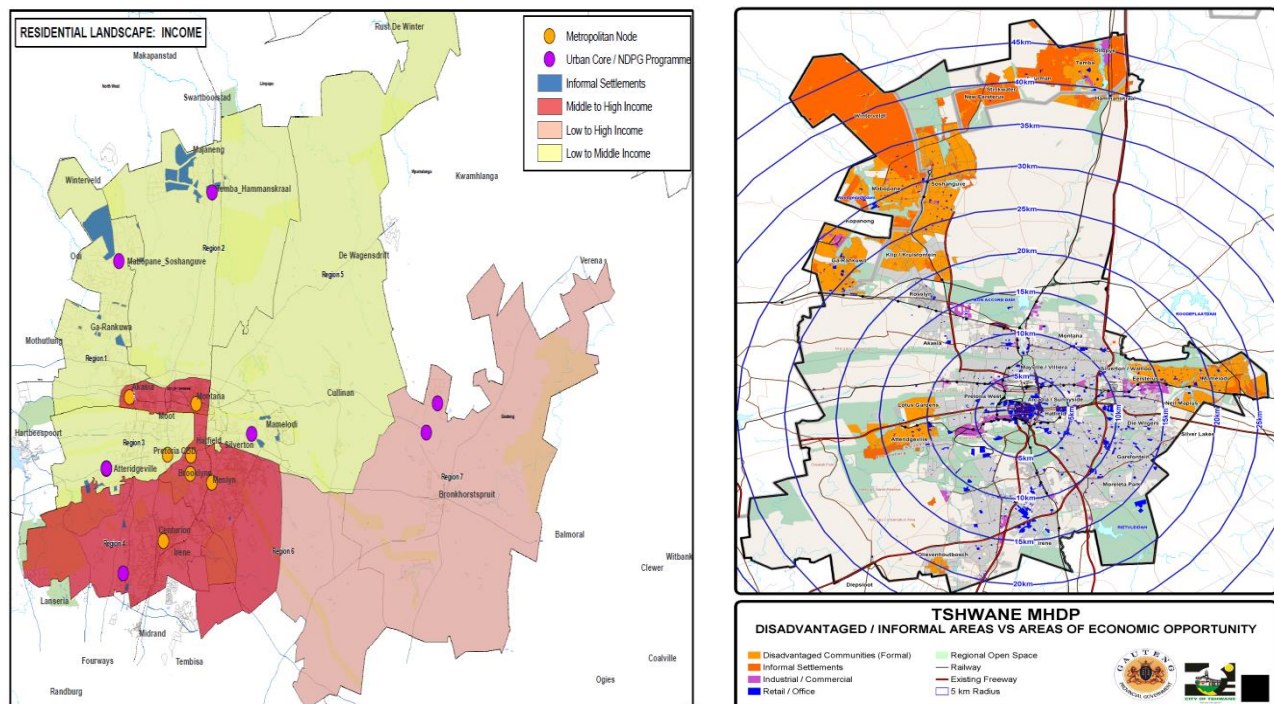
Apartheid planning created fragmented settlements that were made up of sterile and introvert parts, and each one of these parts was reliant on its own generated resources. Consequently, levels of service and convenience were very low. On the other hand, when different parts of a settlement are integrated, each part benefits from a much greater area. That is why the promotion of diverse combination of land uses (also on the level of individual erven) must be viewed as an instrument for reconstruction and tools for integration of fragmented settlements.

Introduction of mixed land use (residential households which have access to small commercial facilities within walking distance, or in the case of buildings - retail area on the ground floor and residential dwellings on the upper) would facilitate the mushrooming of local business initiatives, based on provision of goods and services for the local population. This would create job opportunities and would result in economic growth. In the same time, the well planned open spaces and parks in the residential areas with playgrounds for children and banks, would be places where people can meet and socialise, and would result in the creation of a community feeling. When people have social interaction they are aware of their needs and this stimulates the opening of businesses that provide goods and services for the local community.

Apartheid Spatial Pattern has resulted in the following:

- Distorted spatial patterns
- Marginalized communities on periphery
- Many areas lack basic infrastructure e.g. water, sanitation, decent roads, electricity
- These restrict private sector investment in the poorest areas
- Unequal distribution of social and economic development

Therefore COT is strongly committed to distribute the funding in order to bridge the gap and to address the legacy left by Apartheid by investing in the low income areas, through different programs and town planning approach. Map 12 and 13



Residential Landscape Income and Disadvantaged/ Informal Areas VS Areas of Economic Opportunity

SITUATIONAL ANALYSIS: HUMAN SETTLEMENT DEMAND AND CHALLENGES

4.1. Quantity, Type and Spatial Distribution of Housing Demand

4.1.1. Introduction

This section of the document summarises the extent and spatial distribution of housing demand in terms of informal settlement throughout the entire metropolitan area (as depicted on **Figure 6**). The information is firstly provided per region, and then summarised per each of the functional areas of the City of Tshwane (refer to **Table 5**).

Note:

It should be noted that a settlement is classified as “Formal” only when the following criteria have been complied with:

- ☑ **Approved General Plan**
- ☑ **Services Take-Over by the City of Tshwane has been confirmed.**

All human settlement structures located on land which does not comply with the above criteria have been counted and included in the “Informal” category.

From Table 5 it is evident that there is an estimated 155 948 informal structures in the City of Tshwane (2013 Survey), compared with 160 564 recorded in 2011 and 145 475 in 2009. These informal structures exist in a total of 178 incidences/clusters of informal settlement.

The three regions with the highest number of structures recorded are Region 1 (33 991 units), Region 2 (33 399 units) and Region 6 (34 153 units). Collectively these three regions represent 66% of all informal settlement in the City.

Region 3 (18 665 units) and Region 4 (16 933 units) also hold significant numbers while Regions 5 and 7 represent about 6% each of the total.

The average annual increment in informal settlement for the period 2006 to 2013 is 1426 units. It is also interesting to note that only Regions 1 and 2 recorded a reduction in informal settlement since 2006. Region 6 (Mamelodi) have shown the highest annual increase at approximately 1339 units per annum.

Annexure A in this document contains a comprehensive record of informal settlements per region since 2006 and also indicates the areas that have been formalised since then. Each of the regions is briefly discussed in the following section:

4.1.2. Region 1

As shown in **Table 6**, Region 1 comprises 32 informal settlement areas totalling about 33 991 structures. These informal settlements are spatially depicted on **Figure 7**. The vast majority of the informal structures are located in the Remainder of Winterveld North on the farm Klippan 102 JR (12 304 units) while Winterveld X5 also accommodates a significant quantity (4770 units) (**Figure 8**).

Table 5: Tshwane SHSMP: Number of Informal Units per Region, 2006, 2009, 2011 and 2013

REGION	2006	%	2009	%	2011	%	2013	%	2006 - 2009	2009-2011	2011-2013	2006-2013	Average change p.a.
Region 1	38 526	26%	36 221	25%	38 335	24%	33 991	22%	-2 305	2 114	-4 344	-4 535	-648
Region 2	44 803	31%	37 483	26%	38 918	24%	33 399	21%	-7 320	1 435	-5 519	-11 404	-1 629
Region 3	12 674	9%	11 606	8%	15 411	10%	18 665	12%	-1 068	3 805	3 254	5 991	856
Region 4	16 289	11%	16 196	11%	16 956	11%	16 933	11%	-93	760	-23	644	92
Region 5	3 524	2%	4 903	3%	7 012	4%	8 942	6%	1 379	2 109	1 930	5 418	774
Region 6	24 779	17%	30 389	21%	35 045	22%	34 153	22%	5 610	4 656	-892	9 374	1 339
Region 7	5 369	4%	8 677	6%	8 887	6%	9 865	6%	3 308	210	978	4 496	642
Total Tshwane Informal Housing	145 964	100%	145 475	100%	160 564	100%	155 948	100%	-489	15 089	-4 616	9 984	1 426

Note: 178 Informal Settlements

Sources: GeoTerralimage Pty Ltd, Aerial Photos 2009, 2010
Plan Associates, Aerial Photos Counts 2009, 2011, 2013

Note: 1. 2006/2009 total differs slightly from previous report, because of refinements made to counts
2. Formal Townships: Include all townships up to Services Uptake stage, as per Proclamation Table 62
3. Adjust to make provision for FF surveys where applicable

Table 6: Region 1: Informal Settlements

NUMBER	Note	SETTLEMENT AREAS	2013
1	Outside UE	Winterveldt North Rem. Outside UE	3 165
2		Winterveldt North Rem.	12 304
3		Winterveldt X5	4 770
4		Mabopane Unit A1	261
5		Mabopane Unit A2	52
6		Mabopane Unit EW	403
7		Mabopane Unit M3	117
8		Mabopane Unit M4	4
9		Botshabelo Res	659
10		Mabopane Unit T	36
11		Ga-Tsebe 1	123
12		Kopanong X2	9
13		Kopanong X3	391
14		Garankuwa View 1	1 087
15	Tribal	Ptn 2/R Sjambok Zijn Oude Kraal 258 JR (Hebron 1)	290
16	Tribal	Ptn 1/R Sjambok Zijn Oude Kraal 258 JR (Hebron 1)	273
17	Tribal	Ptn 4 Sjambok Zijn Oude Kraal 258 JR (Garankuwa Unit 26)	3 170
18		Garankuwa Unit 3 (Erf 4231)	9
19		Ptn 4/R Uitvalgrond 434 JQ (Garankuwa Unit 4)	37
20		Mountain View (44/R Uitvalgrond 434 JR)	19
21		Boikutsong/Orange Farm	508
22		Soshanguve-KK2	1 052
23		Soshanguve-Buffer X X1 Road Reserve	76
24		Soshanguve-Buffer Y X1 Road Reserve	56
25		Soshanguve-R1	224
26		Marry-me (/R Wentzelrust 223-JR)	2 837
27		Plastic View South	75
28		Dikolobeng (ptn 4 Eldorette 311 JR)	174
29		Ptn 140 Klerksoord AH	49
30		Dipereng (Ptn 30 Klerksoord AH)	43
31		Ptn 134/R Klerksoord AH	58
32		Occupied building in Koos De La Rey Street	1 660
		TOTAL REGION 1	33 991

In the Mabopane area the largest concentration is in Botshabelo to the south-west, around Mabopane Units A1 and A2 and EW in the north-eastern parts close to Mabopane Business Node and Station; and at Kopanong towards the south. (Refer to **Figure 9**).

In GaRankuwa the major challenges exist at GaRankuwa Unit 26 where the backlog is 3170 units and at GaRankuwa View with 1087 units. (Refer to **Figure 10**).

In Soshanguve North the informal areas are still clustered around the regional open space system running through the central parts of the area where Soshanguve KK2 recorded the largest number of units as shown on **Figure 11** (1052 units).

In Soshanguve South (**Figure 12**), the largest informal settlement occurs in the Marry-Me area located to the north of the Kopanong railway station where about 2837 units were registered. It is important to note the large number of units which have been moved to new formal towns from Soshanguve South since 2009 (especially from the Plastic View community in the far south).

Figure 13 illustrates the spatial extent of informal settlement in the Klerksoord area and towards Pretoria North to the south-east. There are approximately 325 units in the Klerksoord area (numbers 28, 29, 30 and 31 on Figure 13), while the building in Koos de la Rey Street in Pretoria North (area 32) recorded about 1660 occupants.

4.1.3. Region 2

Table 7 reflects the informal settlement areas in Region 2 while the spatial distribution of these areas are graphically illustrated on **Figure 14**.

Table 7: Region 2: Informal Settlements

NUMBER	Note	SETTLEMENT AREAS	2013
33		Steve Bikoville 2	3 234
34	Tribal	Mandela Village	1 298
35	Tribal	Marokolong 1	1 459
36	Tribal	Ramotse Unit 1	2 250
37	Outside UE/Tribal	Ramotse North	58
38	Tribal	Majaneng	3 113
39	Tribal	Mashemong	3 970
40	Outside UE	Bosplaas West 1	65
41	Tribal	Suurman	3 505
42	Tribal	Suurman 1 (Tweefontein)	91
43		Sekampaneng	716
44		Sekampaneng 1	379
45		Kudube Zone 3 (Stand 3742)	98
46		Kudube Zone 6	76
47		Kudube Zone 7	41
48		Kudube Zone 8	1 147
49		Kudube Zone 9	1 570
50		Kudube Unit 13 (Rent View)	79
51		Hammanskraal West X3	47
52		K207	12
53		K224A	17
54		Hammanskraal West A (part of Hammanskraal West x2)	33
55	Tribal	Dilopye 1	126
56	Outside UE/Rural	Ptn 6/R Stinkwater 97-JR	36
57		Tswaiing Village	8 731
58		Pwv 9A	83
59		Pwv 9B	115
60		Rail Servitude	51
61	Outside UE	Wallsmannsthal (Ptn 1/R Buffelsdrift 281 JR)	202
62	Outside UE	Ludwig Roses (Haakdoornlaagte 277JR)	450
63	Outside UE/Rural	Ptn 44/R Honingnestkrans 269-JR	31
64	Rural	Ptn137 De Onderstepoort 300-JR	72
65	Rural	Ptn 61 De Onderstepoort 300-JR	13
66	Rural	Ptn 1 De Onderstepoort 300-JR	98
67	Rural	Ptn 2/R De Onderstepoort 300-JR	27
68	Rural	Ptn 106 De Onderstepoort 300-JR	13
69	Rural	Ptn 145 De Onderstepoort 300-JR	32
70	Rural	Ptn 63 Wonderboom 302-JR	39
71	Rural	Ptn 42 Onderstepoort 266-R	22
		TOTAL REGION 2	33 399

Figure 14 shows that the majority of informal settlements occur in the far northern parts of Region 2 in the Temba-Hammanskraal-Stinkwater-Tshwaing area. There are also some isolated clusters of informal settlement which recently developed around the Wonderboompoort and Wallmannsthal areas in the southern extents of the Region. Although the settlements around Wonderboompoort are small (note the “Rural” areas numbered

64 to 71 on Table 7), these represent the early signs of a new settlement trend most probably activated by the increased levels of economic activity around the N4 Maputo Corridor, Wonderboom Airport and the proposed new Pyramid Freight Hub.

The detail of the Temba-Hammanskraal-Kudube functional area is illustrated on **Figure 15**. Significant influx into the area was recorded in the Suurman area (number 41) while Marokolong 1 (area 35) and Steve Bikoville 2 (area 33) also recorded an extensive number of new housing structures.

Also noteworthy is the fact that many of the areas fall within Tribal areas and that a high percentage of the housing units located in the area are permanent brick structures. Most of the backlog in the area is thus not typical “temporary shack areas” but rather comprises permanent housing structures on land which does not comply to the requirements to be classified as “Formal” as noted in section 4.1.1 above. This is thus an administrative/town planning backlog rather than a housing structure backlog.

Kudube and Hammanskraal are formally proclaimed townships with some small incidences of informal settlement located in these (refer to areas 45, 46, 50, 51 and 54 on Figure 15).

The Tshwaing village in the north-western extents of Region 2 as reflected on **Figure 16** is characterised by a large concentration of informal/temporary structures (about 8731 units) which were established on the land during the past five years (since 2009).

Figure 17 illustrates the spatial extent of informal settlement in the Wallmansthal area to the east of the N1 freeway in the south-eastern parts of Region 2. Approximately 650 units were recorded in this area during 2013.

Figure 18 summarises the small incidences of rural informal settlement in the southern extents of Region 2 in the vicinity of Wonderboompoort. Although the numbers are small, this represents a new settlement trend in the City of Tshwane, and it can be expected that it will gain momentum during the next few years.

4.1.4. Region 3

The vast majority of the 18 665 informal structures recorded in Region 3 (see **Table 8**) are located in and around Atteridgeville, while most of the rural incidences of informal settlement are to the north thereof in the western extents of the Moot area (**Figure 19**). It should, however, also be noted that a large part of the Atteridgeville informal settlements are located in Region 4 which is situated to the south thereof.

The most prominent informal settlement areas in Region 3 include Itereleng/The Hills with almost 4000 units (refer to **Figure 20**), Concern (1305 units), Jeffsville (2557 units), Phumolong (2123 units) and Vergenoeg with 1977 units.

In New Westfort to the north of Lotus Gardens the count was 2481 units, while the largest count in the Moot part of Region 3 was recorded in the Nursery site/Zandfontein (1061 units) (**Figure 21**).

Several smaller incidences also occur to the north thereof around Claremont (Area 88) and Ceramic (Area 89).

Figure 22 depicts the isolated, small informal settlements in the rural parts of the western extents of the Moot area which collectively total about 230 units (areas 90 to 93).

Table 8: Region 3: Informal Settlements

NUMBER	Note	SETTLEMENT AREAS	2013
72		Itereleng	2 277
73		The Hills	1 704
74		Matlejoane	578
75		Saulsville C	203
76		Saulsville B	29
77		AD Section	924
78		Concern	1 305
79		Jeffsville	2 557
80		Phumolong	2 123
81		Vergenoeg	1 977
82		Dark City (SLV A hostel)	64
83		Salvokop	480
84		LGS East	48
85		New Westfort	2 481
86		Cosmopolitan (Nursery) (Zandfontein 87,88/R/317JR)	279
87		Brookway/Melusi (Nursery) (Zandfontein 21/R,124,150,227/317JR)	1 061
88		Part of Erven 46,65 Claremont (Bremerstreet)	122
89		Ceramic (Boekenhoutkloof 72/R/315JR)	220
90	Outside UE/Rural	Ptn 15 Rietvalei 314-JR	45
91	Outside UE/Rural	Ptn 30 Boekenhoutkloof 315-JR	156
92	Outside UE/Rural	Ptn 408 Kameeldrift 313-JR	15
93	Outside UE/Rural	Ptn 235 Kameeldrift 313-JR	17
		TOTAL REGION 3	18 665

4.1.5. Region 4

In Region 4 the informal settlements are clustered in three distinct areas. The northern cluster is the largest and represents almost 10 000 of the structures in the Region (refer to **Figures 23, 24 and 25**). In the central part of Region 4 the major challenge is the Mooiplaats informal settlement located close to the Sunderland Ridge industrial area (number 102) and which consists of about 6067 units.

In The Reeds there are about 149 units (area 103), while the backlog in Olievenhoutbosch totals approximately 710 units (area 104) – see **Figure 26**.

Four incidences of informal settlement also occur in the rural parts of the region outside the Urban Edge, totalling about 223 units.

Table 9: Region 4: Informal Settlements

NUMBER	Note	SETTLEMENT AREAS	2013
94		Thaba Tshwane south of Monument	50
95		Vergenoeg	2 202
96		Brazzaville	4 912
97		Siyahlala	899
98		Schurveberg	741
99		Atteridgeville X16	226
100		Pwv7 Road Reserve	159
101		Atteridgeville X18	595
102		Mooiplaats	6 067
103		Reeds	149
104		Olievenhoutbos X27	710
105	Outside UE	Ptn 12 Knopjeslaagte 385-JR	33
106	Outside UE	Laezonia (Ptn 157,188 Kruispaaie 392 JR)	131
107	Outside UE	Ptn 119 Kruispaaie 392-JR	23
108	Outside UE	Ptn 72 Doornrandje 386-JR	36
		TOTAL REGION 4	16 933

4.1.6. Region 5

Region 5 represents the north-eastern extents of the City of Tshwane and more specifically the area from Roodeplaat Dam up to Moloto on both sides of the Moloto Road.

As illustrated on **Figure 27**, it includes the informal settlements around Refilwe (2043 units), at Lethabong/Donkerhoek south of Mamelodi (1422 units), Ptn 175 Kameeldrift (1396 units) and part of Mamelodi (East of Lusaka) with 1014 units.

The Kameeldrift informal settlement forms part of a number of incidences of informal settlement around the Derdepoort area in the vicinity of Roodeplaat Dam (refer to **Figure 28**) and represents a rapidly growing trend.

Further to the east the Leeuwfontein informal settlement occurs close to Mahube Valley and represents the first signs of northward expansion pressure of Mamelodi through the Magalies Mountain.

The informal settlements of Refilwe (2043 units), Onverwacht (618 units) and De Wagendrift (128 units) are illustrated on **Figure 29**, while the Mamelodi East and South related informal settlements (numbers 118, 119, 121 and 122) are shown on **Figure 30**. Collectively these represent about 3300 units.

Table 10: Region 5: Informal Settlements

NUMBER	Note	SETTLEMENT AREAS	2013
109		Ptn 249/R Derdepoort 326-JR	44
110		Ptn 15 Derdepoort 326-JR	9
111		Ptns 532, 536, 111/R Derdepoort 326-JR	114
112		Ptn 175 Kameeldrift 298-JR	1 396
113		Ptn 651 Kameeldrift 298-JR	79
114		Ptn 123, 124 Leeuwfontein 299-JR	681
115	Outside UE	Ptn 79 De Wagendrift 417-JR	128
116		Onverwacht	618
117		Refilwe/Machaka View	2 043
118		Mahube Valley X15 (Region 5)	368
119		East of Lusaka	1 014
120		Phumzile (Ptn 138 Elandshoek 337-JR)	497
121		Ptn 45/R, 66,67 Pienaarspoort 339-JR	529
122		Lethabong (Ptn 3, 4/R Donkerhoek 370-JR)	1 422
		TOTAL REGION 5	8 942

4.1.7. Region 6

Region 6 comprises the eastern extents of the urban complex of the City of Tshwane around Mamelodi and the Boschkop-Tiegerpoort rural areas towards the south-east thereof.

Table 11 indicates that the Region recorded approximately 34 153 informal units of which the vast majority (\pm 32 000) are located in and around Mamelodi (also refer to **Figure 31** which shows the spatial clustering of informal settlement at the eastern end of Mamelodi). This is the area in the City of Tshwane that shows the highest influx of people from other parts of Southern Africa.

Figure 32 illustrates the Mamelodi East precinct in greater detail.

Informal settlement in this area occurs in two linear strips and a central core area.

Table 11: Region 6: Informal Settlements

NUMBER	Note	SETTLEMENT AREAS	2013
123		Phase 1	2 669
124		M8 Road Reserve	68
125		Mamelodi Ext 10 North	1 089
126		Mamelodi X10 South	754
127		Mamelodi X17 North A	180
128		Mahube Valley X3 A	114
129		Pwv 17A	96
130		Pwv 17B	66
131		Pwv 17C	272
132		Pwv 17D	573
133		K54	14
134		K54 A	19
135		Mamelodi X12	44
136		Mamelodi X11	4 028
137		Mamelodi X18	938
138		Mamelodi Ext 22	193
139		Lusaka (east of Mamelodi x22)	4 926
140		Mahube Valley X15 (Stoffel Park)	3 559
141		Transnet	4 711
142		Transnet 1	3 717
143		Erf 34041 / Mamelodi X6 (Phomolong)	2 666
144		Mamelodi East (Erven 19070/1)	141
145		Mamelodi East (Erven 18838/9)	68
146		Ptn 1 Hatherley 331-JR	1 021
147		Mamx14 (Eerste Fabrieke)	81
148		Erf 19122 Mamelodi West	27
149		Erven 2026-2036,2052-2056,1482,1483 Mamelodi West	141
150		Ptn 149 The Willows 340-JR	20
151		Ptn 223 Zwartkoppies 364-JR	137
152		Ptn 47/R Zwawelpoort 373 JR	68
153		Woodlands	865
154		North of Woodlands (Ptn 284/R Garstfontein 374-JR)	187
155	Outside UE	Ptn 495 Zwawelpoort 373-JR	95
156	Outside UE	Ptn 1/R Boschkop 369-JR	22
157	Outside UE	Kanana (Kameel Zyn Kraal 547-JR)	460
158	Outside UE	Ptn 43-48 Kleinzonderhout 519-JR	49
159	Outside UE	Ptn 2 Boschkop 543-JR	75
		TOTAL REGION 6	34 153

The western strip was established in the early 2000's and mainly comprises people who settled in the road reserve of route PWV15 and the rail reserve, as well as the large portions of Transnet land, including Stand 33041 to the south.

The eastern strip represents the eastern edge of Mamelodi bordering onto the Magalies Mountain. This is the last strip of developable land to the east of Mamelodi and was invaded during the period 2008-2014. An estimated 8500 households currently reside in this area. (Refer to areas 139 and 140 on Figure 32).

The central southern parts of Mamelodi (K54, Mamelodi X11, and Mamelodi X12 and X18) as illustrated on Figure 32 also comprise a large concentration of informal settlement – estimated at approximately 5000 units.

Several smaller isolated incidences of informal settlement occur directly adjacent to the south of the railway line around Nellmapius and Hatherley (refer to **Figure 33**), and in the rural extents towards the south-east as shown on **Figures 34 and 35** respectively.

4.1.8. Region 7

Region 7 represents the far-eastern extents of the City of Tshwane which includes Zithobeni at Bronkhorstspuit; Rethabiseng and Ekangala towards the north thereof, and rural informal settlements on the farms Vlakfontein and Leeuwkloof to the far north-east, and around the farm Witpoort to the far south-east (**Figure 36**).

From **Table 12** it is evident that the area holds approximately 9865 informal structures. To the north, the majority of the informal structures are located in Ekangala (2374 units) with a small concentration also in Rethabiseng (205 units), and 15 units at Schietpoort. (Refer to **Figure 37**).

In Zithobeni there are about 6000 units of which the largest numbers are located in extension 9 (1021 units) and extension 8 (3535 units) – both of which represent the eastern extents of Zithobeni (**Figure 38**).

The informal settlements in the south-eastern end of Region 7 collectively comprise about 350 units as shown on **Figure 39**.

As far as the rural settlements outside the urban edge are concerned, the two largest backlogs were recorded to the north-west on the farm Vlakfontein/ Sokholumi (number 177) with 923 units and Leeuwkloof/Sehlakwane (number 178) with 220 units (**Figure 40**).

Table 12: Region 7: Informal Settlements

NUMBER	Note	SETTLEMENT AREAS	2013
160		Ekangala Ext	2 374
161		Rethabiseng	205
162	Outside UE	Ptn 2/R Schietpoort 507-JR	15
163		Zithobeni	389
164		Zithobeni X2	37
165		Zithobeni X3	158
166		Zithobeni X4	13
167		Zithobeni X5	184
168		Zithobeni X6	140
169		Zithobeni X7	300
170		Zithobeni X8	3 535
171		Zithobeni X9	1 021
172	Outside UE	Ptn 63 Roodepoort 504-JR	105
173	Outside UE	Ptn 29/R Klippeiland 524-JR	48
174	Outside UE	Ptn 22,23 Blesbokfontein 558-JR	73
175	Outside UE	Ptn 2/R, 6/R Witpoort 563-JR	56
176	Outside UE	Nooitgedaght (south east)	69
177	Outside UE/Tribal	Sokolumi (Vlakfontein 458-JR)	923
178	Outside UE/Tribal	Sehlakwane (Leeukloof 235-JR)	220
		TOTAL REGION 7	9 865

4.2. Backyard Units

Apart from distinct informal settlement areas in the City of Tshwane, there are also backyard residential units in most of the formal low income township areas in the City.

Table 13 summarises the situation pertaining to the number of backyard units counted within the City of Tshwane area of jurisdiction from an aerial photography survey conducted during 2010. Unfortunately there are no more recent records for the backyard units in the City. From this it is evident that a total of 83 378 backyard unit structures were recorded throughout the entire metropolitan area. The largest number of backyard structures were identified in the Mamelodi area where 31 649 structures were counted (see **Figure 41** as an example of backyard unit counts). This is significantly more than any other area in the City of Tshwane, with the second most units being counted in Soshanguve North where 10 879 units were recorded.

This is followed by Atteridgeville (9446 units) and Temba where the count totalled about 7427 units. In general, backyard units represent a form of affordable rental stock to the City. Typically the occupants of backyard dwelling units are members of extended families, non-qualifying residents/job seekers in the City and/or for people on the waiting list for RDP housing.

Table 13: Total Backyard Units in Tshwane, 2009

SETTLEMENT AREA	2009
Temba	7 427
New Eersterus	2 196
Winterveld	359
Mabopane	1 401
Garankuwa	2 762
Soshanguve North	10 879
Soshanguve South	5 425
Atteridgeville	9 446
Mamelodi	31 649
Centurion	7 165
Refilwe	967
Zithobeni	1 287
Ekangala Ext	2 094
Rethabiseng	321
TOTAL	83 378

Sources: GeoTerralimage Pty Ltd, Aerial Photos 2009, 2010
Plan Associates, Aerial Photos 2009
Counts from 2010 Google Image

It is evident from Table 13 that backyard dwellings occur in all the former township areas of the City of Tshwane. It is a means of economic survival to many residents and it also provides affordable rental stock to the rental market. As illustrated on Figure 41 even new residential developments like Nellmapius to the south of Mamelodi are characterised by high incidences of backyard dwellings which also indicates a strong market for affordable rental units in these areas.

4.3. Hostels

The following is a brief summary of the main features of each of the public hostels in the City of Tshwane:

a) Soshanguve Hostel

☐ This hostel is situated in Soshanguve Block K a few hundred metres to the east of the Soshanguve railway station (see **Figure 42**). It comprises of nine separate blocks each consisting of more or less 50 family units. This hostel was a single black male hostel and now it is fully converted into family units including a soccer field and children's playground. The total number of converted units is 356.

☐ This is a low cost housing scheme and the tenants use prepaid cards for electricity. The hostel is converted into bachelor units, one bedroom units, two bedroom units and three bedroom units.

☐ The hostel redevelopment policy emphasises the need for job creation within the project and 50% of the labour force was sourced from the hostel. Eight emerging contractors were hired in the project and three contractors were women.

☐ NB: Accommodation fees are as follows:

- R86.00 pm for one bedroom unit/bachelor
- R120.00 pm for two bedroom unit
- R210.00 pm for three bedroom unit

Challenges

- ❑ No cleaning and security staff.
- ❑ Insufficient maintenance and operational budget.
- ❑ High rate of unemployment and culture of non-payment.
- ❑ Poor billing system resulting in poor rental collection.
- ❑ Poor technological linkage with main office (no office, computers, fax machine, telephone lines etc).
- ❑ Currently no opportunity for cost recovery.

The current priorities for the Soshanguve Hostel are as follows:

- ❑ Eviction of illegal occupants.
- ❑ Creation of cost effective maintenance and cost recovery plans.
- ❑ Upgrading of billing system.
- ❑ Creation of office space.
- ❑ Capacitating and skills development of staff.
- ❑ Initiating economic empowerment activities with the possibility of positive spin offs in rental payment.
- ❑ Creating sustainable human settlements.

b) Saulsville Hostel

❑ This hostel is situated in Saulsville adjacent to the south-west of the Saulsville railway station and the Atteridgeville CBD (**Figure 43**). It comprises of 22 blocks housing more than ten thousand residents. Approximately 70% of hostels have already been converted into family units. A total of 411 units have been converted into three bedroom units.

This is also a low cost rental housing scheme and the tenants use prepaid cards for electricity.

❑ The old section of the hostel that is not yet fully converted into family units is being taken care of with regard to maintenance. 14 emerging contractors and equal number of sub-contractors are appointed for the Saulsville project and fifty percent of the labour force is sourced from the hostel as part of job creation.

❑ A total of R58 million was made available towards the upgrading of the hostel in the Tshwane MTEF, of which the annual allocation is R19 million.

Challenges

- ❑ High rate of unemployment.
- ❑ Very low rental collection and poor billing system.
- ❑ High crime rate.
- ❑ Lack of leadership amongst residents.
- ❑ Old and unskilled workers.
- ❑ Too much political interference.
- ❑ Insufficient capital funding.
- ❑ Insufficient operational and maintenance budget.
- ❑ Old dilapidated building structures.
- ❑ Poor technological linkage with main office (no computer network points).

The current priorities for the Saulsville Hostel are as follows:

- ❑ Socio-economic surveys done and finalised.

☐ Ongoing registration and consumer education.

☐ Ongoing allocation upon completion of units.

Ongoing rental collection and debt control.

☐ BNG-densification (high rise).

☐ Eradication of crime.

☐ Creating cost effective maintenance and cost recovery plans.

d) Mamelodi Hostel

e)

The upgrading and redevelopment of the Mamelodi hostels was identified as a priority by Gauteng Department of Housing in 2000 in terms of its Hostel Redevelopment Programme. Phase 1 of the upgrading commenced with a socio-economic survey which was undertaken by the Gauteng Department of Housing and Local Government (GDLGH) in 2001. Official estimates put the number of inhabitants at 7900, but unofficial estimates were approximately 14 000 inhabitants. This formed the basis of a business plan, the demolition of some of the original hostel structures and the construction of seven three-storey buildings.

However, the rentals for these new units, based on cost recovery were however found to be too high and thus not affordable by the beneficiaries. A preliminary report for Mamelodi Hostels Redevelopment Urban Development Framework was approved by the Mayoral Committee on 22 October 2008 where it was requested that the development be in line with new policies such as the Breaking New Ground (BNG), and due to the fact that the new structures were unaffordable to the beneficiaries and did not comply with the principles of the Solomon Mahlangu Precinct Urban Design Framework. It was decided that the Department rethink the entire project.

The construction of a pilot phase commenced on two portions of land that were immediately available for development. The pilot phase consists of 56 semi-detached units; 131 residential walk-up flats; as well as commercial units and community facilities. The pilot project was funded by GDLGH and the City of Tshwane. An amount of R18 million was made available in the 2008/2009 capital budget to commence with the pilot project. Another R5m was received externally.

For the 2010/11 financial year, R18 million was allocated to develop forty-eight (48) units (with mixed typologies), and R19,8 million was allocated for the 2012/13 financial year.

The UDF makes provision for approximately 4000 residential units consisting of a variety of housing types (walk-up flats for rental; semi-detached RDP units; and credit-linked/gap housing); commercial facilities, social facilities and open spaces. The proposals are in line with the Solomon Mahlangu Precinct UDF in terms of density zones, vehicular and pedestrian access and linkages, land use mix and placing of units (**Figure 44**).

Challenges

☐ High rate of unemployment.

☐ High crime rate.

☐ Poor leadership focusing on personal economic enrichment amongst residents at the expense of the project.

☐ Old and unskilled workers.

☐ Too much political influence.

☐ Insufficient capital funding.

☐ Insufficient operational and maintenance budget.

☐ Old dilapidated building structures.

Poor waste management system.

☐ Low literacy level among residents.

☐ Resistance to change.

d) Kingsley Hostel

☐ This hostel was built in 1978 and it is situated in Mamelodi West. The hostel has a capacity of 3120 beds and it consists of six blocks. Each block has more than 25 rooms with twenty beds each. Each block has ablution facilities, ironing room, kitchen, dining hall with TV and cold rooms to cater for residents.

☐ There is also twenty four hour access control. The hostel houses a mixture of City of Tshwane single male employees and also single males from the community.

☐ NB: All City of Tshwane employees accommodation fees are deducted directly from their salaries and subsidised. Municipal employees pay R50.18 pm per bed while the other community members pay R110.00 pm per bed. Parking cost R13.20 pm per car for under cover parking and R6.60 per car for open space parking.

Challenges

☐ Mostly old and unskilled workers.

☐ Structural defects.

☐ Insufficient operational and maintenance budget.

☐ Poor technological linkage with main office (no computer network points).

☐ Minimum rental collection which impacts negatively on cost recovery plan.

The current priorities for the Kingsley Hostel are as follows:

☐ Repainting of the entire hostel in line with a five year painting policy of council's buildings.

☐ Replace/repair all rusted galvanised plumbing pipes.

☐ Introduce a five year cost effective and efficient maintenance plan.

☐ Establish a safe car park for residents.

☐ Introduce a reliable billing and rental collection system.

☐ Outsource the security duties and develop the remaining staff for other duties e.g. property management.

☐ Create a five year cost recovery plan.

e) Belle Ombre Hostel

☐ This hostel caters only for standby employees of Electricity, Water and Sanitation and Roads Departments of the City of Tshwane. The hostel has a capacity of 104 beds with a staff component of only ten employees.

☐ The relevant departments cover the accommodation costs of the employees on standby.

☐ The hostel is situated next to Marabastad and Belle Ombre Railway Station.

Challenges

☐ Old and unskilled workers.

☐ Structural defects mainly in the showers and ablution blocks.

☐ Outdated fridge / cooling facilities.

Poor technological linkage with main office (no computer network points).

The current priorities for the Belle Hombre Hostel are as follows:

- ☐ Fitting of new industrial fridges/cold room.
- ☐ Repainting the hostel.
- ☐ Capacitating the hostel staff.
- ☐ Upgrading the showers and ablution blocks.
- ☐ Upgrading Lapa Joe (braai area) to generate income.

Key Principles for Sustainable Hostel Development:

- ☐ Co-funding of hostel projects (50-50 ratio).
- ☐ Support by the top management for use of emerging contractors programme.
- ☐ Inclusion of social consultant in the professional team.
- ☐ Constant and regular consultation with residents committees.
- ☐ Establishment of float account to facilitate and support emerging contractors with cash flow.
- ☐ Flexible procurement processes.
- ☐ Political support and passionate officials.
- ☐ Passionate and supportive top management.

f) Refilwe Hostel

The Refilwe hostel is located directly to the west of the sports stadium and south of the main entrance road to the Refilwe township area (**Figure 45**). Detailed socio-economic surveys were conducted for the hostel during 2007, but there is no information available pertaining to recent or proposed future upgradings.

g) Zithobeni Hostel

As far as Zithobeni is concerned, the hostel is located in the central part of the township area as spatially depicted on **Figure 46**. No technical information pertaining to the current status and/or future programmes for the hostel are available at this stage.

4.4. Conclusive Summary

Table 14 below summarises some critical figures pertaining to informal settlements, backyard units and the official Housing Demand Database of the City of Tshwane.

Table 14: Tshwane: Demand

DEMAND	UNITS
- Informal Housing Counts	155 948
- Backyard units (Affordable Rental Demand)	83 378
- Demand database (Subsidised Housing Demand)	151 168

The number of structures counted in informal areas total about 155 948 units. Not all these units are “shacks” as many of the houses located in areas under traditional leadership are permanent in nature. Backyard units total about 83 378 units and it can be assumed that the majority of these represent rental demand, and more specifically affordable rental.

The third important figure to note is the 151 168 records on the Tshwane Housing Demand Database (former Housing Waiting Lists) which strongly corresponds with the 155 948 informal units recorded.

From the above it can be concluded that the subsidised housing demand in the City of Tshwane is at least 151 168 units and the demand for affordable rental stock could be 83 378 units or thereabout.

4.5. Identification and Assessment of Strategic Development Areas (Land Supply)

4.5.1. Introduction

Having determined the quantum and spatial distribution of the various forms of housing demand (informal settlements, backyard units and hostels), in the City of Tshwane, it is necessary to identify the areas (land) where the housing demand can be accommodated in future. This is a very important process which should ensure that especially the disadvantaged communities and the poorest of the poor are located in areas where they have easy access to social and economic opportunities and facilities, as well as public transport. This is a pre-requisite to future Sustainable Human Settlement within the City of Tshwane as defined in Tshwane Vision 2055 and in the Tshwane Spatial Development Framework.

The 2007 Municipal Housing Development Plan of the City of Tshwane took a first step towards identifying smaller pockets of land which would promote infill development and contribute towards the consolidation of the existing urban fabric in and around the former township areas. Most of these strategically located land parcels were suitable to promote medium and higher density residential development (infill and densification) closer to the Inner City of Tshwane.

The process was repeated during the 2010 review of the Tshwane Sustainable Human Settlement Strategy when significantly more land parcels were identified. The results of the exercises conducted during 2007 and 2010 are illustrated on **Figures 47a and 47b** respectively.

The red land parcels illustrated on Figure 47a were aimed towards the consolidation and strengthening of the urban fabric of the former township areas through a process of infill development. These areas were mostly linked to the in-situ formalisation of informal settlements located on or close to these areas.

However, at the time it was also agreed that a more interventionist approach was required in order to pre-actively promote and facilitate a drive towards medium and higher density residential infill development and densification on smaller, strategically located land parcels closer to the Inner City and/or areas of job opportunity.

These land parcels are indicated in blue on Figures 47a and 47b. All these land parcels were deemed to be suitably located land close to the majority of job opportunities and within walking distance from major public transport routes.

As part of the 2014 Sustainable Human Settlement Plan review process this information was further refined and updated with information emanating from several new initiatives implemented by the City of Tshwane since 2010.

The following section highlights the land identified from these initiatives and provides a preliminary indication of the potential development capacity (and suitability for residential development) of these vacant land parcels.

4.5.2. City of Tshwane: Council Owned Strategic Land Parcels

During 2009 the City of Tshwane approved the release of about 35 strategic land parcels located throughout the City with the intention that the development of these should act as a catalyst for economic growth locally, and in metropolitan context. The various land parcels originally identified are graphically illustrated on **Figure 48a**.

As a first phase in the process it was decided to release 12 priority land parcels to the private sector and to publish a call for proposals towards the development of these. The 12 sites are marked on **Figure 48a** and represent approximately 1483 hectares of strategically located vacant land close to, or within existing or proposed future activity nodes in disadvantaged areas of the City of Tshwane.

Following from the call for proposals, the four sites illustrated on **Figure 48b** have been approved for development. **Table 15** summarises the main features of each of these land parcels, as well as the estimated residential yield to result from the development of these. It is estimated that the four projects could accommodate about 11 002 residential units.

4.5.3. Inner City and Surrounds

4.5.3.1 Boom-Bloed Street Student Accommodation

The City of Tshwane identified certain land parcels located to the north and west of the Inner City as being ideal to accommodate a variety of housing typologies, including student accommodation. The land parcels are mostly located around Boom and Bloed Street in the vicinity of Belle Ombre railway station.

Apart from residential development catering for student accommodation, other uses such as retail, business and commercial will also be considered in order to promote the principle of mixed use development in this area. Social and recreational facilities will also be provided in support of the residential component.

The various land parcels identified through this process are numbered 1 up to 5 on **Figure 49**. Based on the latest planning for the different blocks, it is estimated that this precinct can accommodate about 10 081 residential units (flats) in future as part of a “Student Village”. (Refer to **Table 16**)

2.3.2 Inner City Private Sector

Apart from this precinct which will be mainly developed with government funding, there are also three priority precincts identified in the Tshwane Inner City Strategy which will be developed/redeveloped with private sector funding. These three precincts are numbered 6 on Figure 49 and include the precinct around the Pretoria railway station, Church Square, and the Caledonian sports grounds.

Table 15: Tshwane: Council Owned Strategic Developable Land

Nr.	PRIORITY SDA's	Area (ha)	Units	Region	Status	Uses	Assumption
1	R/1 Leeuwkraal (Temba)	169.4	5 200	2	Awaiting development proposals. Possibility of Land Claim.	Mixed use development	Semi-detached (31 du/ha gross)-LUB
2	R/8873 Garankuwa Unit 5	90.0	3 906	1	Awarded to Developer	Mixed use development	Proposed development/Residential1,2,4
3	Erven 35383,35386,35387 Mamelodi x13 (Denneboom)	4.4	696	6	Land availability still in process of being signed. The developer has been confirmed.	Mixed use development/Appropriate land use to be investigated	Walk - ups (160 du/ha nett) - part of TOD
4	Ptn 20/R, Olievenhoutbosch 389 JR	36.5	1 200	4			Semi-detached (33 du/ha gross)-LUB
	TOTAL	300.2	11 002				

Table 16: Inner City and Pretoria West Vacant and Redevelopable Land

Nr.	Name	Units
A	INNER CITY PUBLIC SECTOR	
1	West Capital Precinct Plan	6 989
2	Madiba Heights (Provincial Housing Project)	604
3	Krugerpark (estimate)	750
4	Schubart Park	1 008
5	Thembelihle Housing Project (YEAST)	730
	Subtotal	10 081
B	INNER CITY PRIVATE SECTOR	
6	Private Sector (Station, Church Square, Caledonian)	21 087
	TOTAL INNER CITY	31 168
C	PRETORIA WEST	
7	Pretoria West Residential Densification Strategy	8 250
	TOTAL INNER CITY AND PRETORIA WEST	39 418

Sources: Tshwane Inner City Revitalisation Strategy, Metroplan, 2014
City of Tshwane, 2014

According to Inner City representatives the estimated residential yield for these three precincts will be about 21 087 units (see Table 16).

Combined with the public sector funded development noted above, it is estimated that the Tshwane Inner City could eventually provide for about 31 168 additional residential units (mostly rental).

4.2.3.3 Pretoria West

During 2008 the City of Tshwane commissioned the compilation of an Integrated Compaction and Densification Strategy for the Pretoria West area as illustrated in blue on Figure 49.

From the 2010 Tshwane Sustainable Human Settlement Strategy it was calculated that this area could eventually redevelop into about 8250 additional residential units as noted in Table 16.

This brings the total incremental residential yield for the Tshwane Inner City and surrounds (Pretoria West) to 39 418 units (public and private sector funded).

4.5.4. Tshwane Restructuring Zones Vacant Land Audit

During 2011 the City of Tshwane conducted an audit of vacant land zoned for residential purposes located within the various Restructuring Zones of the City of Tshwane.

Figure 50 depicts the location and size of all these land parcels identified. It also indicates the ownership of the various land parcels identified. From this it is evident that a large percentage of the land identified comprises Council owned land (green), followed by a large number of erven under private ownership (yellow), as well as extensive Transnet land (black) and Government owned land (brown).

A total of 893 hectares of land was identified in this way as indicated on **Table 17**. Table 17 shows that about 25% of all the land belongs to the City of Tshwane (225 hectares), about 35% to the private sector (311 hectares), and about 6% (49 hectares) to Government and Transnet. The ownership of 34% of the land parcels was undetermined. The majority of land is located in the Pretoria North area (226 hectares), followed by Atteridgeville (179 hectares), Centurion with 177 hectares, and Silverton-Mamelodi which contributes about 154 hectares of land.

Table 18 shows the same information per Region of the City of Tshwane. The bulk of the land (40%) is located in Region 3 (357 hectares), followed by Region 4 (21%/187 hectares), and Region 1 (18%/157 hectares). Regions 2 and 5 recorded 5% and less of all the land while no land was identified in Region 7. At an average density of about 80 units per hectare it is estimated that these vacant land parcels could accommodate approximately 71 477 future residential units.

Table 17: Pretoria West Residential Densification Strategy: Potential Number of Units

	RANKING 1							
Restructuring Zone	City of Tshwane	Financial Institution	Government	Private	Transnet	Unknown	Total	%
Atteridgeville / Pretoria West	112	0	7	8	0	52	179	20%
Centurion	22	1	2	140	0	12	177	20%
Inner City	7	0	0	0	0	0	7	1%
Menlyn	3	0	0	0	0	0	3	0%
Moot	8	0	11	0	9	108	136	15%
Pretoria North	21	0	6	96	6	97	226	25%
Rosslyn	5	0	0	2	0	5	12	1%
Silverton / Mamelodi	46	0	9	65	0	34	154	17%
Total	225	1	35	311	14	308	893	100%
%	25%	0%	4%	35%	2%	34%	100%	

Table 18: Vacant Land Audit Ownership (Ranking 1 – Residential) (ha) by Region

	RANKING 1 (ha)							
Restructuring Zone	City of Tshwane	Financial Institution	Government	Private	Transnet	Unknown	Total	%
Region 1	13		6	83	6	50	157	18%
Region 2	2			15		18	35	4%
Region 3	136		18	7	9	188	357	40%
Region 4	24	1	2	141		19	187	21%
Region 5	19			22		6	46	5%
Region 6	30		9	43		28	111	12%
Region 7							0	0%
TOTAL HA	225	1	35	311	14	308	893	100%
%	25%	0%	4%	35%	2%	34%	100%	
UNITS (at 80du/ha)	17 967	103	2 761	24 862	1 128	24 655	71 477	

4.5.5. Land Identified for Subsidised Rental

During the review of the Tshwane Sustainable Human Settlement Strategy, officials from the City of Tshwane requested that the information contained in **Table 19** and shown on **Figure 51** be incorporated.

It comprises land which has been earmarked to partly accommodate future subsidised rental stock (Social Housing or Community Residential Units (CRU) funded units).

In cases where the exact number of units catered for are known these were included as such into Table 19. Alternatively, a density ranging between 40, 80 and 160 units/ha was applied (pending the local circumstances) in order to determine the potential yield.

As shown in Table 19 it is expected that these 12 project areas could collectively yield about 19 422 residential units of which 75% (14 634 units) could be Social Housing as these are located within restructuring nodes; and 25% (4788 units) are located outside the Restructuring Zones and could thus only be funded via CRU funding.

A significantly high yield can be derived from the Transwerk site (number 9) - estimated at 8760 units; as well as areas 1, 2, 3, 5, 6 and 8 – all of which could accommodate more than 1000 units each

4.5.6. Vacant Private Land Adjacent to Mamelodi and Olievenhoutbosch

Adjacent to Mamelodi and Olievenhoutbosch the City of Tshwane identified two project areas driven by the private sector (bonded housing) where the City wishes to negotiate the inclusion of some subsidised housing (Figure 52).

Table 20 below notes the detail of the two sites as well as the intended subsidised housing component to be negotiated. The target yield for these two areas combined totals about 1436 units of which 1134 are around Olievenhoutbosch (Area 1) and 302 around Pienaarspoort (Mamelodi: Area 2).

4.5.7. Tshwane Integrated Rapid Public Transit Network (IRPTN) Functional Area

During 2013 the City of Tshwane initiated the first stages of the planning and development of the Integrated Rapid Public Transit Network for the City. The network includes the commuter rail system as well as other routes identified for Bus Rapid Transit (BRT) and/or Light Rail services in future. **Figure 53** illustrates the bulk of the IRPTN network proposed for the short to medium term.

As part of this investigation an assessment was made of residential development opportunities along a 500 meter wide strip on both sides of the BRT network and a kilometre radius around the commuter railway stations in the City. The results of this exercise are illustrated on Figure 53 and summarised on **Table 21**

Table 19: Tshwane: Subsidised Rental Projects

Nr	Region	Restructuring Zone	Description	ha	Density	Yield	%	Comment
1	1	Inside	Ptns 28/R, 154 Hartebeeshoek 303 - JR (Wonderpark Shopping Centre)	15.5	80	1 241	6%	
2	3	Outside	Fort West x 4 (part)*			1 256	6%	
3	4	Outside	Various erven in Olievenhoutbos x36	8.7	160	1 392	7%	3 storey walk - ups: 160du/ha nett
4	4	Outside	Erf 11967 Olievenhoutbos x37	0.8	160	133	1%	3 storey walk - ups: 160du/ha nett
5	3	Inside	Salvokop			1 170	6%	
6	3	Inside	Ptns 78,89,90,151/R Daspoort (Capital Park)	14.0	80	1 119	6%	
7	5	Outside	Ptn 677 Derdepoort 326 JR	11.6	80	926	5%	Close to node, BRT, Moloto rail
8	5	Inside	Erf 332 East Lynne	22.0	80	1 760	9%	
9	3	Inside	Ptn R/78 Hartebeespoort 328 - JR (Transwerk)	109.5	80	8 760	45%	
10	3	Inside	Ptn 1, Koedoespoort 325 - JR (Transwerk)	7.3	80	584	3%	
11	6	Outside	Nelmapius x 22 (part)**			550	3%	
12	7	Outside	R/32, part of R/27, Hondsrivier 508 - JR	13.3	40	531	3%	
Subtotal Inside Restructuring Zone						14 634	75%	
Subtotal Outside Restructuring Zone						4 788	25%	
TOTAL						19 422	100%	

Table 20: Tshwane: Privately Owned Vacant Land

Nr.	PRIVATE LAND	Area (ha)	Units	Region	Comment
1	Various portions to the east of Olievenhoutbos*	226.7	1 134	4	25 du /ha - say 20% to Subsidised Housing?
2	Pienaarspoort x 2-6 (Ptns 65,66,67,72 Pienaarspoort 339 - JR)	168.8	302	5	say 10% to Subsidised Housing?
TOTAL		395.5	1 436		

* Mixed Use Typologies developed by developer. CoT to provide serviced stands – negotiate % for Housing

Table 21: IRPTN: Developable Land (Stations and Lines) – Alternative Alignment by Region

IRPTN NETWORK	Developable Area	Residential Area	Residential Units				Residential Units			
			High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL
	ha	ha								%
Region 1	640	470	3 759	5 842	27 987	37 588	6%	10%	36%	19%
Region 2	187	159	6 524	4 231	2 004	12 758	10%	7%	3%	6%
Region 3	1339	848	15 410	25 277	27 120	67 807	24%	44%	35%	34%
Region 4	509	381	16 306	10 150	4 049	30 505	26%	18%	5%	15%
Region 5	93	55	804	585	3 010	4 399	1%	1%	4%	2%
Region 6	711	569	21 087	11 271	13 160	45 519	33%	20%	17%	23%
Region 7	0	0	-	-	-	-	0%	0%	0%	0%
TOTAL Alternative	3479	2482	63 890	57 357	77 330	198 577	100%	100%	100%	100%
%			32%	29%	39%	100%				

Essentially, there are about 2482 hectares of land suitable for residential development within the functional area of the Tshwane IRPTN. This land holds potential for 198 577 residential units at an average density of 80 units per hectare. The capacity around railway stations amounts to 65 048 units and along the BRT routes it stands at 133 529 units. Based on the nature and character of surrounding areas which the network runs through, the development potential is estimated at 77 330 (39%) low income (subsidised rental full ownership) units, 57 357 (29%) middle income units and 63 890 (32%) high income units.

The nature of development varies between redevelopment (in old areas), densification (subdivision etc.), and infill development (on greenfields sites), and the typical housing typologies to be developed comprise 2, 3 and 4 storey walk-up facilities.

Table 21 also shows the development potential per region and per income category. From this it is evident that the highest potential for low income development around the IRPTN is in Region 1 (36%), Region 3 (35%), and Region 6 with 17%.

4.5.8. Conclusive Summary

Table 22a and b summarises the residential development potential of all the strategically located vacant land in the City of Tshwane as discussed in sections 4.5.1 to 4.5.7 above. The same information is spatially depicted on **Figure 54**.

Evident from this is the fact that well-located, smaller pockets of land within the existing urban fabric of the City of Tshwane can accommodate an estimated 149 377 subsidised (low income) residential units and 191 955 middle and higher income units. This brings the total residential yield on these land parcels to 341 332 residential units.

This is significantly more than the 95 006 subsidised units and 15 050 middle and high income units capacity identified in the 2010 SHSS. (Total = 110 055 units).

B4: RESIDENTIAL INFRASTRUCTURE-PROPERTY RELEASE AND MANAGEMENT: LAND AND BUILDINGS

The city is in the process of developing a Land Release Strategy and is also exploring various mechanisms in respect of its real estate property. Parallel to this process is the development of the Property Management Strategy, which will focus on illegal occupation of Council owned land and buildings. This sub-section will be updated with the next review depending on progress made to effectively respond to the Guidance Note requirements.

City of Tshwane: Council Owned Strategic Land Parcels

During 2009, the City of Tshwane approved the release of about 35 strategic land parcels located throughout the City with the intention that the development of these land parcels should act as a catalyst for economic growth locally and in metropolitan context.

As a first phase in the process it was decided to release 12 land parcels to the private sector and to publish a call for proposals towards the development of these. The table below summarises the main features and size of each of these land parcels identified as part of Phase 1.

Main Features and Size of each of the Land Parcels of Phase 1 Table 49

Property Description	Extent (ha)	Potential land uses
Erven 20886 to 20918 Soshanguve South Ext 14	± 7,2 ha	Mixed uses development (light industrial, offices, retail, community facilities etc).
Lotus Gardens Erf 2	13,1797 ha	CBD, Mixed use, Primary Lotus Gardens Activity Node
Erf 3525, Pretoria Ext 14	4,45 ha	Appropriate land use to be investigated.
Portion 3 and 4 of Erf 158 Watloo	15,66 ha	General Industrial – zoning is in place
Remainder extent of Portion 279 and 285 of the farm Garstfontein 374 JR	± 216,6 ha	Mixed uses development, Higher Density Housing, Social facilities (schools), offices, retail, community facilities etc.
Erven 35383, 35386, 35387 Mamelodi Ext 13 (Denneboom)	4,35 ha	Appropriate land use to be investigated.
Portion 60 (a portion of Portion 1) of the farm Rietvallei 377R	16,0923 ha	Appropriate land use to be investigated.
Remainder of portion 20 of the farm Olievenhoutbosch 389 JR	64,7 ha	Appropriate land use to be investigated.
Portion 191 Hartebeestpoort 328 JR (vacant land surrounding Municipal Testing grounds)	2,7797 ha	Restricted industrial.
R/1 Leeuwkraal 92 JR	1027,0547 ha	Urban Core, Inter modal transport facility, mixed use.
Portion 15, 16 of the farm Kruisfontein 259 JR	21,4133 ha	Mixed land use.
Remainder of Erf 8873 GaRankuwa Unit 5	± 90 ha	Social facilities (affordable housing, swimming pool, library, community hall, indoor sport, disability centre).

Criteria used to identify the land parcels considered: Land parcels owned by Council; high potential for PPP engagement in line with interest shown by private investors and developers; location either within the 8 Inner City Precincts, and/or within a 1 km radius of TRT route, Regional offices, NDPG Nodes (Urban Hubs/Urban Cores) and Activity Corridors.

A total of 1483 hectares of land was identified as part of Phase 1, and as illustrated on Figure 10 these sites are mostly located in or close to previously disadvantaged communities on strategically located vacant land close to, or within existing or proposed future activity nodes.

B4 RESIDENTIAL INFRASTRUCTURE REVIEW: DENSIFICATION STRATEGY FOR PUBLIC TRANSPORT CORRIDORS

- The Sub-section is an extract from the IRPTN Land Use Implications Report (Draft CIP 2014) modelled on the RSDFs 2014 and supporting LSDF/UDFs.
- It responds to the question on the applicable strategy to have better located housing development for all and specifically the poor in relation to densification. Further addressing access to urban opportunities and integration with public transport within 500m.
- This sub-section also addresses B6 in respect of the land use management implications of the IRPTN;
- Tshwane's Draft Comprehensive Integrated Transport Plan (CIP 2014), is premised on the Gauteng Transport Master Plan (GTMP) 2013, which draws its planning principles and directives from the National Development Plan (NDP) 2030. The forecasting for the Draft CIP is modelled up to 2037 as it is in line with the GTMP.
- The development of the Tshwane Rapid Transit corridor is Tshwane's highest mobility investment area due to its spatial restructuring capabilities;
- Tshwane's TRT is structured to connect and unlock accessibility, connectivity and development potential between the rail network , TRT and other public transport routes;
- Furthermore, it has strengthened public/private sector partnerships with the taxi industry;
- For 15_16, the primary focus is on the catalytic projects along the IRPTN focussing on specific nodes and Phase 1 of the TRT.

IRPTN LOCAL CORRIDOR ANALYSIS

Points of Departure and Methodology

Although additional modelling and analysis was conducted during January 2014 to reach consensus regarding the IRPT Network, the project team continued with the Local Corridor Analysis of the IRPT Network as it stood on 13 January 2013, namely the 2013 IRPT Network together with additional linkages considered up to that point in time.

For analysis purposes, the rail system as well as the respective TRT lines was divided into functional sections. The railway line was divided into ten sections, and the TRT system into four lines.

Points of Departure/ Principles:

A number of principles were taken as points of departure for the detailed Local Corridor Analysis. These include:

- The principle of densification along TRT Corridors and around railway stations (TOD development) as promoted by the MSDF and RSDFs of the City;
- That existing PRASA rail infrastructure would be optimised, because rail is the backbone of the IRPT Network; and
- That brownfields sites would be optimised, and infill development on vacant land pockets would be prioritised before expanding the urban footprint.

Methodology:

The Local Corridor Analysis was conducted in the following manner:

- Firstly, a conceptual/ high level analysis was conducted for each of the rail and TRT sections respectively.
- The prominent land uses within the functional service area of IRPTN stations and corridors were identified.
- Following from that, a buffer of 200m was drawn along the length of the TRT corridors (RSDF standard), and a 500m buffer around all railway stations (RSDF minimum standard).
- Vacant land parcels or those with potential for redevelopment within the buffer zones were isolated on GIS.
- Next, the identified land parcels were categorised (in terms of suitability for development) into one of the following categories depending on development trends in the surrounding area, physical access to the sites, and existing development on the site:
 - o Residential infill development, redevelopment, or densification;
 - o Mixed use infill development or redevelopment;
 - o Industrial infill development (only in existing industrial areas)
- Finally, the land parcels were measured and their development capacity quantified at an average density of 80 dwelling units per hectare (Ha) to determine the possible residential yield of land within walking distance of the IRPT Network.
- The figures were totalled per category per Tshwane traffic zone, to calculate a subtotal of residential capacity/ potential yield per route section and per station precinct of the entire Network.

The detailed corridor analysis follows. The railway system and its respective station precincts is first discussed together with the model results, followed by the TRT Network, its respective route sections, and related model results.

Rail System Structure

The metrorail system was divided into ten sections for analysis purposes. The rail system forms a wheel-like structure, whereby the hub is formed by the ring rail (sections 8, 9 and 10), and it is linked to spokes in every direction. The northern spokes serve Mabopane/ Soshanguve (Section 1), Ga-Rankuwa (Section 2) and Temba/ Hammanskraal (Section 3) respectively. The two spokes to the west serve the Moot area (Section 4) and Pretoria West/ Atteridgeville (Section 5) respectively. To the east the rail links into Mamelodi (Section 7), while the spoke to the south, together with Gautrain, serves the Centurion area (Section 6).

Sectional Analysis

Each station along the railway line is discussed below – per section. An overall/ conceptual analysis of the functional area served by each section is given. This is followed by a detailed analysis of the prominent land use features per station precinct. Finally, a functional assessment was conducted of every station precinct to earmark – within a 500m buffer around each respective station – potential infill areas and/or land that could be redeveloped to better support the IRPTN.

SECTION 1: MABOPANE TO DASPOORT

Conceptual Analysis

- The entire length of Section 1 traverses a fairly urban/ built-up area
- The first four stations of Section 1 of the railway line are situated in the City's rural north-western extents, comprising mostly low income residential development including Mabopane, Soshanguve and Soshanguve South
- Next the railway line passes through the Rosslyn Industrial Area, with two stations serving the industrial area.
- The line turns eastward, forming the border of the Pretoria North suburbs. The western extension is Section 2 and will be discussed later.
- At Annlin Section 1 links into Section 3 coming from Hammanskraal and goes through the Poort.
- The line continues through Pretoria West in the direction of the Inner City.
- The last station along Section 1 is namely Daspoort, just before the line links into the ring rail.

1. Mabopane Station

- Mabopane station is fairly well developed; it is an Urban Core and the largest node in the northern extents of the City.

<ul style="list-style-type: none"> • There is a mix of retail, industrial and informal trade activities, combined with community facilities and multi-modal transfer services.
<ul style="list-style-type: none"> • It is proposed that the vacant land identified within 500m of the station be reserved for business development, in line with the station Precinct Plan. • No additional residential development is proposed within the buffer.
2. Soshanguve Station
<ul style="list-style-type: none"> • Development around Soshanguve station comprises predominantly residential development • There are a few pockets of vacant land.
<ul style="list-style-type: none"> • In line with the station Precinct Plan, it is proposed that land to the east of the railway line primarily be utilised for residential redevelopment, while two pockets of land close to the station be earmarked for business infill development
3. Lebaleng Station
<ul style="list-style-type: none"> • Two major roads run parallel to the railway line on either side. • The road reserves, and coupled with a regional drainage system that traverses the area limits the developable land around Labeleng Station.
<ul style="list-style-type: none"> • The small vacant portion adjacent to the regional drainage system is proposed for infill residential development. • A small pocket to the north-west is earmarked for industrial infill development.
4. Kopanong Station
<ul style="list-style-type: none"> • The area around Kopanong station in Soshanguve South represents a proposed mixed use/ multi-functional node. • To date, infrastructure has been provided, internal roads constructed, the station upgraded, and a large bus and taxi rank have been constructed. • A number of existing community facilities are also consolidated at the station, namely a clinic and MPCC, a community hall, and formal hawker stalls. • The precinct is however not well-used and the taxi and bus ranks remain unused, the proposed housing has not been developed and the commercial sites are still vacant. • The vacant land to the east forms part of a recreational resort (Thorntree View development). • Some of the vacant land has been invaded by squatters, especially in the southern part of the station precinct.
<ul style="list-style-type: none"> • The Precinct Plan for the Kopanong node proposed that land around the station be reserved

<p>for the consolidation of business activity.</p> <ul style="list-style-type: none"> • The remainder of the station precinct is thus earmarked for residential infill development.
5. Akasiaboom Station
<ul style="list-style-type: none"> • The station serves the northern part of Rosslyn Industrial Area. • The node is expanding to the east (Klerksoord Agricultural Holdings).
<ul style="list-style-type: none"> • It is proposed that the vacant land within the station precinct and up to the road reserve of the R80 Mabopane freeway be earmarked for industrial infill development. This area represents an infill area between Rosslyn and Klerksoord. • No residential development is proposed within the buffer zone.
6. Winterneest Station
<ul style="list-style-type: none"> • Winterneest station represents a unique mixed use precinct in that the area to the north comprises the Klerksoord Agricultural Holdings which is earmarked for the future expansion of Rosslyn Industrial Area; while the area to the south comprises a residential community. • To the south of the station is a shopping centre.
<ul style="list-style-type: none"> • Based on the precinct plan for the area, the land directly adjacent to the shopping centre is earmarked for mixed use redevelopment. • Vacant land further away from the station could accommodate residential infill development, together with some redevelopment of low intensity residential areas. • A few vacant industrial sites remain to the north of the railway line. • Linkages from the shopping centre to the station and even across the railway line should be optimised to effectively serve the proposed activity node.
7. Wolmerton Station
<ul style="list-style-type: none"> • To the east of Wolmerton station lies the Onderstepoort Veterinary Academic Hospital with research buildings and grounds. • The area to the north is largely agricultural and is not earmarked for urban expansion. • To the south is mostly single density residential erven of Wolmer suburb, together with very large vacant and semi-developed land pockets to the east and west respectively. • Land within the northern part of the station precinct comprises railway works and tracks.
<ul style="list-style-type: none"> • There is no spare development capacity in the northern hemisphere of the station precinct. • The low density area to the south is however earmarked for residential redevelopment to strengthen the proposed activity node around the station. • The vacant and semi-vacant pockets should ideally accommodate residential infill

development.
8. Pretoria North Station
<ul style="list-style-type: none"> • Annlin West represents an oval-shaped land pocket comprising agricultural land. • The part to the west of the river (closest to the station) has been earmarked for the Rainbow Junction mixed use development. • A strip of erven parallel to the west of the railway line comprises light industrial activities and service industries. • To the west along Gerrit Maritz Street is the Pretoria North CBD. A section of it is situated within the southern part of the station precinct. • The small remaining part of the station precinct comprises mostly single density residential development.
<ul style="list-style-type: none"> • Though the exact land use proposals related to the Rainbow Junction development to the east of the railway line are not known, it was assumed (and is strongly advised) that the section closest to the railway station be utilised for a combination of business and residential uses. • Furthermore, it is proposed that the remaining residential erven to the west be redeveloped at higher densities.
9. Wonderboom Station
<ul style="list-style-type: none"> • Similar to Pretoria North Station, Wonderboom station falls within the proposed Rainbow Junction mixed use development. • The precinct also comprises some industrial activities closest to the station, with business activities and a school consolidated adjacent to Gerrit Maritz Street.
<ul style="list-style-type: none"> • The same premise was followed that was applied to Pretoria North station, with mixed use development to the east (Rainbow Junction) and residential redevelopment of low density areas to the west, surrounding the Pretoria North CBD.
10. Mountain View Station
<ul style="list-style-type: none"> • The last two stations along Section 1 serve the Moot area. • The railway line runs parallel to the western side of Es'kia Mphahlele Drive, a main north-south link. • Within the station precinct, the railway line has created a buffer that protects the area to the west of Es'kia Mphahlele from development pressure, while a regional drainage system mitigates the road's impact on erven to the east. • Thus the adjacent land uses have remained almost purely single density residential.
<ul style="list-style-type: none"> • It is proposed that the station precinct to the west of the railway line be redeveloped at

<p>higher densities to support ridership and strengthen the proposed activity node.</p> <ul style="list-style-type: none"> • Due to the buffer created by Es'kia Mphahlele the hemisphere east of the railway line is unlikely to redevelop.
11. Daspoort Station
<ul style="list-style-type: none"> • Es'kia Mphahlele links into the R80/ John Vorster immediately to the north of the station precinct. It is thus a very strategic location. • The area on both sides of the railway line between the intersections of John Vorster and Van der Hoff with Es'kia Mphahlele Drive comprises the fully developed Hermanstad Industrial Area. • Daspoort station thus serves the industrial area together with the small residential community in the north-western extents of the station precinct.
<ul style="list-style-type: none"> • Due to the nature of the station precinct, it is proposed that the existing residential area be redeveloped for mixed use including light industrial activities and service industries to strengthen the activity node as employment centre.

SECTION 2: Ga-Rankuwa to Rosslyn

Conceptual Analysis

- Section 2 of the railway line runs parallel to the N4 freeway to Rustenburg, and stretches from Ga-Rankuwa to Rosslyn Industrial Area.
- The section comprises 5 stations.
- At Rosslyn it links into Section 1 and continues to Pretoria North.
- The line primarily serves Ga-Rankuwa settlement, Medunsa medical campus and Rosslyn Industrial.
- The land to the south of the railway line is fairly undeveloped.

1. Ga-Rankuwa Station

- The northern hemisphere of the station precinct is almost fully developed with low and medium density residential uses.
- There is a small retail node just west of the station, and some schools and community facilities.
- The station precinct plan proposed that a mixed use activity node be established on the vacant land parcel to the north-east of the station.
- There is an application for large-scale residential expansion to the south of the railway line.

A portion of the development falls within the station precinct.
2. Medunsa Station
<ul style="list-style-type: none"> The area to the north of the railway line is reserved for the expansion of Medunsa campus. Land to the south is rural and there are no known land development applications that affect the area.
<ul style="list-style-type: none"> It is proposed that land to the south remain rural due to limited access across the railway line.
3. Hornsnek Station
<ul style="list-style-type: none"> The station serves a very small residential community on the western border of Rosslyn. There is a very small existing node. Land to the south of the rail is vacant/ agricultural.
<ul style="list-style-type: none"> It is proposed that the southern hemisphere of the station precinct be developed with residential units to strengthen the existing node.
4. Lynnross Station
<ul style="list-style-type: none"> The station is one of three that serves the Rosslyn Industrial Area, together with Rosslyn and Akasiaboom stations. The Lynross precinct comprises two dominant uses namely industrial activities consolidated in the northern hemisphere and residential development in the south. The latter forms part of Akasia/ Pretoria North.
<ul style="list-style-type: none"> It is proposed that the small portion of agricultural land be developed with additional residential units to provide more housing for local employees. The industrial erven are all fully developed.
5. Rosslyn Station
<ul style="list-style-type: none"> The Rosslyn station precinct is very similar to Lynnross station. There northern hemisphere of the precinct is also dominated by industrial activities, and to the south is some residential development. There are pockets of agricultural land within the residential fabric
<ul style="list-style-type: none"> It is proposed that the vacant erven to the north be utilised for industrial infill development, while the agricultural land to the south accommodates additional residential development.

SECTION 3: Hammanskraal to Onderstepoort

Conceptual Analysis

- The north-eastern extents of the City of Tshwane are fairly rural in nature.
- In the far north-eastern corner is Hammanskraal settlement, forming the northern end of Section 3 of the rail.
- The southern end of Section 3 is anchored by Onderstepoort station in Pretoria North.
- Though there are potential plans to reinstate a commuter service along Section 3, the railway stations *en route* were not earmarked for infill development for purposes of this investigation.

1. Hammanskraal Station

- The station precinct represents the activity core of Hammanskraal settlement. The station is surrounded by retail and commercial activities to the eastern side of the railway line.
- The settlement to the west of the railway line is known as Temba/ Kudube and is a functional extension of Hammanskraal.
- The area immediately adjacent to the western side of the railway line is however comprised by a regional drainage system, limiting the developable land within the station precinct.
- Babelegi Industrial Area lies to the north but outside of the station buffer area.
- In line with the Temba/ Hammanskraal precinct plan, it is proposed that the vacant land pockets within the station precinct, along the eastern side of the railway line, accommodate infill business development to optimise the activity node.

5-6. Pyramid and Sphinx Stations

- There is a small existing industrial area to the west of Pyramid station.
- The area to the east of these two stations is earmarked for a logistics hub. If and when this development starts to occur, the two stations will play an increasingly important role.
- No infill development is proposed around the stations in the short term. The development of the logistics hub will however have a profound impact on the two station precincts.

8. Meersig Station

- The station is situated in a rural area but is very strategically located due to its proximity to the N4/ Platinum freeway and Onderstepoort Veterinary Academic Hospital/ campus, Wonderboom Airport, as well as the Bon Accord Dam.
- Accordingly it is proposed that the land pocket to the west of the railway line which is

currently developed at a very low intensity, accommodate infill residential development.
9. Onderstepoort Station
<ul style="list-style-type: none"> The station falls within the Onderstepoort Veterinary Hospital/ campus grounds and there is no commuter service along the railway section.
<ul style="list-style-type: none"> Thus no additional development was proposed within the station precinct.

SECTION 4: Mooka to Machielsnek
Conceptual Analysis
<ul style="list-style-type: none"> Rail section 4 runs parallel to Van der Hoff Road, from Mooka station to Machielsnek station. To the east it links into the ring rail system. While Mooka station is located within the rural western extents of the City, the remaining stations serve the suburban western Moot, as well as the Kirkney and Hermanstad industrial areas respectively.
1. Mooka Station
<ul style="list-style-type: none"> Mooka Station is situated within the Kirkney/ Andeon/ Zandfontein precinct. This area is earmarked for residential densification and -expansion. Currently, the station precinct is developed at a very low intensity, with large tracts of vacant land.
<ul style="list-style-type: none"> In line with the area's precinct plan, it is proposed that the area closest to the station and parallel to Van der Hoff Road on either side be reserved for mixed use infill development. The remaining vacant stands within the station precinct should preferably accommodate new residential units, while erven with existing residential development could be redeveloped at higher densities.
2. Gomsand Station
<ul style="list-style-type: none"> The Kirkney Industrial Area is situated to the north and south of the railway line and Van der Hoff Road. The first block of erven on either side are nearly fully developed with industrial uses.
<ul style="list-style-type: none"> It is proposed that vacant erven bordering on the road be reserved for industrial infill development. According to the zoning map, the area to the south up to the Magaliesberg mountain ridge is reserved for industrial development. However, it is proposed that some residential infill development be consolidated within the station precinct to strengthen the activity node.

3. Sandpits Station
<ul style="list-style-type: none"> • The western and north-eastern quadrants of the station precinct forms part of the Kirkney Industrial Area while the south-eastern and a portion of the north-eastern quadrants comprise single density residential development. • The node is thus already fairly well-developed, apart from some vacant stands in the industrial area to the south.
<ul style="list-style-type: none"> • The vacant land in the south-western quadrant, bordering on Van der Hoff Road is reserved for industrial infill development. • It is proposed that the existing single density erven in the eastern hemisphere of the station precinct be redeveloped at higher densities to increase ridership along this rail section and to strengthen the activity node.
4. Kampstraat Station
<ul style="list-style-type: none"> • Apart from one school and a little industrial and retail activities, the Kampstraat station precinct serves a fully developed low density residential area. • The majority of erven bordering on Van der Hoff Road also still comprise residential uses.
<ul style="list-style-type: none"> • It is proposed that the single density houses within walking distance of the station be redeveloped at higher residential densities.
5. Riekert Station
<ul style="list-style-type: none"> • The land use mix of Riekert station is very similar to Kampstraat station. • There are two schools within the station precinct, located to the north of the railway line. • Some retail activities are consolidated close to the station along Van der Hoff Road. • The remainder of the precinct comprises suburban residential development. • Note that the 500m station buffer slightly overlaps with that of Machielsnek station to the east.
<ul style="list-style-type: none"> • The single density residential erven should preferably be redeveloped for higher density residential development to strengthen the activity node.
6. Machielsnek Station
<ul style="list-style-type: none"> • The station precinct comprises a mix of land uses, ranging from industrial and business to community facilities and residential. • Immediately adjacent to the north of the station is the Bougainville Hospital. • The precinct partially serves the Hermanstad industrial area to the east. • Van der Hoff Road passes to the south of the industrial area, and links into E'skia Mphahlele

(formerly D.F. Malan) Drive south of Hercules Station.
<ul style="list-style-type: none"> • In line with the area's precinct plan, it is proposed that the vacant industrial erven be earmarked for industrial infill development. • Residential redevelopment is proposed for the existing low density residential parts of the precinct.

SECTION 5: Saulsville to Rebecca

Conceptual Analysis

- This western rail section links Atteridgeville and Pretoria Industrial Area with the ring rail that surrounds the Inner City.
- Atteridgeville settlement is served by three stations along Section 5.
- The community is very dependent on public transport. The section within Atteridgeville runs parallel to the N4 freeway and Church Street and there have been concerns that a TRT service along Church Street would be detrimental to the railway line with regards to ridership.
- A station has been proposed on the SAPS Dog School land seeing as the land parcel is a strategic residential infill area of the City. Note that the current use will first have to be relocated.
- The remaining three stations serve Pretoria Industrial Area as well as SAPS College and the light industrial and service industry precinct to the west of the Inner City.

1. Saulsville Station

- Saulsville Station is a Metropolitan Urban Core and the station precinct is nearly fully developed.
- It comprises a mix of uses including sportsgrounds, two municipal clinics, a few small businesses, the Atteridgeville hostels, a fire station, a post office, and a small police facility.
- There is also a school, and a severely neglected commercial area.
- A large land pocket to the north of the railway line is reserved for retail activity but remains vacant.
- An alternative for the vacant land pocket is that it rather be developed with medium to high density residential units to strengthen the residential component of the activity node.
- Residential densities are already relatively high, thus no densification or redevelopment was proposed.

2. Atteridgeville Station

<ul style="list-style-type: none"> • The southern hemisphere of the Atteridgeville station precinct comprises a mix of business activities, community facilities and medium density housing. • More specifically there are six schools, one business, and a sports complex within the buffer. • The area to the north of the railway line forms part of the Skinner Spruit drainage area and is thus undevelopable. Some agricultural activities take place within the drainage system.
<ul style="list-style-type: none"> • The precinct is fully developed where possible. Thus no additional land development proposals were made.
3. Kalafong Station
<ul style="list-style-type: none"> • The most significant entity within this precinct is namely the Kalafong public hospital. It is a large facility. • Three schools surround the hospital, together with some housing. • The remainder of the precinct comprises vacant land and some agricultural land.
<ul style="list-style-type: none"> • It is proposed that the precinct be strengthened by the addition of medium to high density residential units to the north and east of the station and up to Church Street. • A portion of agricultural land is also earmarked for residential development, based on a Council decision to develop a portion of the Skinner Spruit drainage area. This development will be subject to drainage lines and other investigations as required.
4. Proposed 'Dog School' Station
<ul style="list-style-type: none"> • As mentioned, the SAPS Dog School land parcel has been earmarked as one of the City's strategic development areas for infill residential development. • The existing use will however first have to be relocated to a suitable area.
<ul style="list-style-type: none"> • The land parcel could be fully developed with medium to high density residential units, though only a portion of it falls within the station precinct. • Vacant land to the east of the railway line is also earmarked for infill residential development.
5-6. Cor Delfos and Elektro Stations
<ul style="list-style-type: none"> • The two stations serve the Pretoria Industrial Area situated to the south of Pretoria West. This is a major employment hub of the City. • The land surrounding the stations, with the exception of two land parcels, is fully developed with industrial activities.
<ul style="list-style-type: none"> • The vacant land parcels are earmarked for infill industrial development.
7. Rebecca Station

<ul style="list-style-type: none"> • Rebecca station is situated just to the south of the Soutter/ Charlotte Maxeke (Mitchell) Streets activity strip. Uses along these two road sections include auto-repairs, service industries, light industries and some commercial uses. • To the south of the station is the SAPS College. • The station precinct is fully developed.
<ul style="list-style-type: none"> • The station serves an institutional- and industrial precinct. It is thus a destination for employees as well as certain students. • No redevelopment of land was proposed.

SECTION 6: Pinedene to Fountains

Conceptual Analysis

- This section of the railway system serves the southern extents of the City.
- From Pinedene station in the far-south, the section runs parallel to the N1 freeway and the Gautrain to Centurion station .
- There are six stations along Rail Section 6.

1. Pinedene Station

- Pinedene station is situated in a fairly rural part of Tshwane, to the south of Irene.
- The station precinct is undeveloped.
- Although the surrounding area is fairly rural (occupied by the Agricultural Research Council), the station is strategically located between Tshwane and Midrand, and thus ideal for residential development.
- Accordingly, apart from a section that forms part of the regional open space system, the entire station precinct is earmarked for residential infill development at medium to high density.

2. Irene Station

- The Irene suburb is served by Irene station.
- The residential area to the west of the railway line represents a well-established low density residential community.
- There are also two schools within the station buffer.
- However, the area to the east of the railway remains undeveloped.
- The station is also well-located with regards to its proximity to Tshwane and Centurion.

<ul style="list-style-type: none"> • The eastern hemisphere of the station precinct could thus be developed to strengthen the station's role as a point of origin in the IRPT Network.
3. Lyttelton Station
<ul style="list-style-type: none"> • As the railway line continues northwards, it runs directly adjacent to the east of Botha Avenue – a prominent activity street in the Lyttelton area. • Adjacent land uses and especially along the road's western side comprise a mix of retail, office and service industries. • The railway line effectively creates a buffer between the road and erven bordering to the east. • This row of erven comprises higher residential densities than the surrounding single density erven. • Currently, Botha Avenue functions as an activity spine, fairly independent of the railway station.
<ul style="list-style-type: none"> • In order to strengthen the function that the railway station plays in the activity node, it is proposed that the mixed uses along Botha Avenue be retained and enhanced but also that single residential erven along both sides of the railway line and within the station buffer be redeveloped at higher densities. • This in turn will increase the demand for nearby goods and services which will strengthen the node's commercial function.
4. Sportpark Station
<ul style="list-style-type: none"> • Situated just to the north of the intersection between Rabie and Botha Avenues, Sportpark station serves a significant cluster of retail development, supported by community facilities and medium density residential development. • The non-residential uses are mostly consolidated to the west of the railway line seeing as access to the east is mitigated by the railway line itself.
<ul style="list-style-type: none"> • Similar to Lyttelton station, it is proposed that the existing business activities and community facilities be retained, while allowing the remainder of the precinct to the west and east to redevelop at higher residential densities. • Access to and from the station across the railway line would be key to the success of the precinct.
5. Kloofsig Station
<ul style="list-style-type: none"> • The station is located just to the south of Groenkloof/ Fountains Valley nature reserve. • Here the railway line runs along the western border of Botha Avenue. Erven to the east have responded to the high volumes of regional traffic by comprising limited retail and other

<p>business uses.</p> <ul style="list-style-type: none"> • The surrounding area is developed at a low intensity with no prominent community facilities. • To the west and just outside of the station buffer is Zwartkop Air Force Base.
<ul style="list-style-type: none"> • Due to the station's proximity to the Inner City and to Centurion, it is proposed that single density residential erven within the buffer area be redeveloped at medium and high density.
6. Fountains Station
<ul style="list-style-type: none"> • The Fountains Station serves Groenkloof/ Fountains Valley Nature Reserve to the east. • Its western buffer area unfortunately comprises road infrastructure and –reserve, together with a portion of Zwartkop Air Force Base.
<ul style="list-style-type: none"> • No infill development or redevelopment is proposed seeing as the only available land within the precinct comprises a protected area.

SECTION 7: Panpoort to Koedoespoort (Mamelodi Line)

Conceptual Analysis

- The rail section serves Mamelodi and Eersterus settlements, as well as Waltloo, Silverton and Koedoespoort industrial areas.
- Mamelodi is rapidly expanding to the east. There is pressure for alternative infill areas, seeing as the current direction of development is away from the city core.

1. Panpoort Station

- Panpoort station is situated to the east of Mamelodi.
- Apart from a small portion of informal settlement, the station precinct is fairly undeveloped.
- However, Mamelodi is expanding to the east thus there is growing development pressure.
- The greenfields station precinct could be well-planned from the start, with medium to high density residential development and some mixed uses in close proximity to the station (see **Figure 26.2**).
- The portion with informal settlement could be redeveloped or formalised.

2. Pienaarspoort Station

- The northern hemisphere of Pienaarspoort station is fully developed with residential stands, apart from the area reserved for the regional drainage system.
- The area to the south of the railway line is however still vacant.

<ul style="list-style-type: none"> • It is proposed that the southern hemisphere of the station precinct comprise infill residential development at medium to high densities. • However the section traversed by the regional drainage system should be preserved.
3. Green View Station
<ul style="list-style-type: none"> • Two railway lines run parallel to one another through the Green View station precinct. The Mamelodi line links into a railway line from Ga-Rankuwa. • The northern hemisphere of the station precinct comprises informal settlement, while the southern hemisphere remains vacant.
<ul style="list-style-type: none"> • It is proposed that the informal settlement to the north be redeveloped at medium to high densities, and that the southern hemisphere comprise infill residential development.
4. Mamelodi Gardens Station
<ul style="list-style-type: none"> • Stations 4, 5 and 6 are situated within the formal/ well-established part of Mamelodi settlement. • The northern hemisphere of Mamelodi Gardens station is fully developed with single residential erven, as well as two schools. • The area to the south but outside of the station boundary lies Nellmapius settlement. The southern part of the station precinct is however still vacant.
<ul style="list-style-type: none"> • It is proposed that the vacant part of the precinct be developed with medium to high density residential development.
5. Eerste Fabrieke Station
<ul style="list-style-type: none"> • The station is also situated to the north of Nellmapius settlement, and the railway line effectively forms a buffer between the latter and Mamelodi. • The area within the station precinct on Nellmapius' side is vacant. • The land to the north-east comprises residential development, while the north-western section is partially undevelopable as it forms part of a regional drainage system.
<ul style="list-style-type: none"> • Similar to all the previous stations, it is proposed that the southern portion of Eerste Fabrieke station comprise infill residential development. • Furthermore, it is proposed that the sections of the north-western quadrant that fall outside of the 1:100 year floodline be developed with residential stands.
6. Denneboom Station
<ul style="list-style-type: none"> • The activity node surrounding and in the vicinity of Denneboom station was identified as an Urban Core in the Tshwane MSDF. • The node is well served by rail and road infrastructure, seeing as it is located at the

<p>intersection of Waltloo and Stormvoël Roads, and at a station with high ridership.</p> <ul style="list-style-type: none"> • The station precinct itself comprises a shopping centre, various community facilities, some residential development and municipal services. • The section to the south partially serves Waltloo Industrial Area. • Just to the north-east of the station is the Mamelodi 'T-section activity node', a prominent mixed use node in the settlement, while a prominent sports node including H.M. Pitje stadium is situated to the north of the station.
<ul style="list-style-type: none"> • Due to the accessibility of the station, it is proposed that the remaining vacant land close to the station be earmarked for business infill development, while the land pocket to the east and further from the station could be filled with medium-high density residential development to further strengthen the Urban Core node.
7. Waltloo Station
<ul style="list-style-type: none"> • Stations 7, 8 and 9 serve the Waltloo and Silverton Industrial complex. • Waltloo station is situated to the north of Waltloo. • Its southern hemisphere is fully developed with industrial uses. • Stormvoël Road which runs parallel to the north of the railway line creates buffer between the industrial area and residential Eersterus to the north. • The buffer includes a few community facilities but no schools.
<ul style="list-style-type: none"> • It is proposed that the limited vacant erven to the south be earmarked for industrial infill development. • Furthermore, the single residential erven within the northern part of the station precinct should preferably be redeveloped at higher densities, in order to strengthen the node.
8. Eersterus Station
<ul style="list-style-type: none"> • The western extents of Waltloo Industrial are served by Eersterus station. • The western part of the station precinct comprises industrial activities. • The eastern half is also earmarked for industrial use but remains vacant. • A small residential area to the north of Stormvoel Road also falls within the buffer area but it is unlikely to redevelop due to the buffer between it and the station created by the industrial land.
<ul style="list-style-type: none"> • The vacant land to the east is earmarked for industrial infill development.
9. Silverton Station
<ul style="list-style-type: none"> • Between the railway line and Stormvoël Road to the north is more industrial activities,

<p>linking to Waltloo Industrial and Koedoespoort to the east and west respectively.</p> <ul style="list-style-type: none"> • A significant activity node has established to the south of Silverton station. Land uses include retail and service-industries, together with some community facilities. • Dykor Road links the precincts to the north and south of the rail with one another. • There is also an activity strip along Pretoria Road, just outside of the station precinct to the south. • The few erven in between the activity strip and the station are residential.
<ul style="list-style-type: none"> • The station node is relatively strong. • It is therefore only proposed that the existing single residential erven be redeveloped at higher densities.
10. Koedoespoort Station
<ul style="list-style-type: none"> • The extensive rail infrastructure around Koedoespoort station extends up to Stormvoël Road to the north. • The buffer to the south includes a part of the Pretoria National Botanical Gardens which is a protected area.
<ul style="list-style-type: none"> • Since there are no developable vacant land parcels within the station precinct, no changes are proposed to the Koedoespoort node.

SECTION 8: Ring Rail North (Queenswood to Capital Park West)

Conceptual Analysis

- Section 8 of the railway system forms the northern section of Tshwane's ring rail.
- The line serves the Koedoespoort Industrial Area in Queenswood, the low density residential area of the Moot, the activity strip along Voortrekker Road, and the Capital Park precinct (see **Figure 27.1**).
- The rail runs midblock between Nico Smit (formerly Michael Brink) Street and Pierneef Street, and vehicular accesses across it are limited.
- Seeing as the enormous vacant land parcel to the west of Capital Park station was earmarked as a strategic development area, it is proposed that the precinct also be served by a new station – proposed Capital Park West. The existing Capital Park station is referred to as Capital Park East.

1. Queenswood Station

- The Koedoespoort Industrial Area is located adjacent to the north of Queenswood station. It

<p>is fully developed.</p> <ul style="list-style-type: none"> To the south and connected to Koedoespoort via a pedestrian underpass is the single residential area of Queenswood.
<ul style="list-style-type: none"> The single residential properties surrounding Koedoespoort and within the station precinct could be redeveloped at higher densities to strengthen the activity node around Queenswood station.
2. Pierneefsrus Station
<ul style="list-style-type: none"> The precinct is predominantly low density residential in character. Additionally, there are limited retail activities, as well as one school and other community facilities/ government services.
<ul style="list-style-type: none"> There is much development potential if all the single residential erven are redeveloped at higher densities. Although the entire precinct is earmarked for residential use, mixed use developments could also be introduced.
3. Villiera Station
<ul style="list-style-type: none"> Villiera station is very similar to Pierneefsrus station in land use mix. While the dominant use is single residential, there are limited non-residential uses including retail and community facilities.
<ul style="list-style-type: none"> The area could be redeveloped at much higher densities to support nodal development around the station.
4. Deerness Station
<ul style="list-style-type: none"> There is a concentration of non-residential uses at the intersection between Frates Road and 18th Avenue in the Moot, including the Jacaranda Centre. The first section of Parker/ Frates Street has become of an activity street. Adjacent uses include specialised shops and restaurants. There is also an activity street to the north along Frederika Street. There are two schools to the east of the railway line and one to the west.
<ul style="list-style-type: none"> Similar to stations 2 and 3, all of the single residential properties in the Deerness station precinct could be redeveloped at higher densities.
5. Gezina Station
<ul style="list-style-type: none"> The activity strip along Voortrekker Road comprises a mix of retail, service industries and

<p>light industrial activities.</p> <ul style="list-style-type: none"> • It is well-served by Gezina station. • Furthermore, the station buffer includes the Gezina city centre and a portion of the smaller activity strip along Frederika Street. • To the west is a portion of the Capital Park precinct
<ul style="list-style-type: none"> • Existing single residential erven could be redeveloped for medium to high density residential use. • Should the Capital Park precinct be redeveloped, it is proposed that the existing activity strip along Voortrekker Road be extended along its western border to create continuity.
<p>6. Capital Park East Station</p>
<ul style="list-style-type: none"> • The existing Capital Park station comprises extensive logistics infrastructure and has no vacant developable land. • However, the City might develop a logistics hub at Pyramid station near Wonderboom airport to the north. • If and when this development occurs, the infrastructure at Capital Park could be transferred to the new node.
<ul style="list-style-type: none"> • In that case, the Capital Park East precinct could be redeveloped for medium and high density residential use. • The area could accommodated a significant proportion of the housing backlog, and its proximity to the Inner City makes it an ideal strategic development area. • Land that borders onto Paul Kruger Street should preferably be reserved for mixed use development to establish continuity of the activity strips along Paul Kruger to the south and Mansfield Avenue to the north.
<p>7. Capital Park West (proposed) Station</p>
<ul style="list-style-type: none"> • As mentioned, this enormous vacant land parcel to the west of Capital Park station has been earmarked as a strategic development area by Council. • It is proposed that the precinct also be served by a new station as part of the ring rail – proposed Capital Park West – and to create a transit-oriented community from the outset. • A small portion to the south of the proposed station’s buffer zone comprises single residential erven.
<ul style="list-style-type: none"> • The precinct is thus earmarked for infill residential development. • Similar to Capital Park East station, continuity of the activity strip along Paul Kruger Street should be established.

- The limited single residential erven to the south could also be redeveloped at higher densities.

SECTION 9: Ring Rail West (Hercules to Schuttestraat)

Conceptual Analysis

- The western leg of the ring rail system links the Moot with Pretoria West.
- It serves a number of significant precincts, including the Hermanstad Industrial Area, Tshwane University of Technology (TUT), the activity strip along Church Street West, and Marabastad in the Inner City.

1. Hercules Station

- The eastern part of the station precinct and a small portion of the western hemisphere comprises industrial activities.
- Retail activities and service industries along Van der Hoff Road form an activity strip.
- The remainder of the western hemisphere comprises single residential erven.
- The single residential erven could be redeveloped at higher densities to strengthen the node.

2. Technicon Rant Station

- Technicon Rant station serves the Tshwane University of Technology (TUT) campus to the west.
- To the south of the rail and across from Staatsartillerie Way is the Tshwane Fresh Produce Market. Though it falls just within the station buffer, it is not really accessible from the station due to extensive rail infrastructure.
- The topography makes it difficult to develop the vacant land within the precinct.

3. Golf Station

- The station precinct is developed at a low intensity.
- It serves a secondary school to the west and the Tshwane Leadership and Management Academy to the east.
- There is no vacant developable land within the station precinct.

4. Schuttestraat Station

- The station precinct comprises a mix of land uses in Pretoria West including single

<p>residential, medium density residential, retail, service industries, light industrial, two schools, and a sports centre.</p> <ul style="list-style-type: none"> The northern part of the precinct, along Church Street West, has the greatest concentration of retail, while service industries and light industrial activities are consolidated along Soutter Street.
<ul style="list-style-type: none"> The single residential erven throughout the station precinct could be redeveloped at higher densities, while the strip of erven along Rebecca Street could accommodate mixed use development.
5. Belle Ombre Station
<ul style="list-style-type: none"> Belle Ombre station is situated along a separate link of the ring rail, just outside of the Inner City. It serves a very busy part of the Inner City, including Belle Ombre Plaza and Marabastad
<ul style="list-style-type: none"> A few erven that are developed at a low intensity in the southern part of the station precinct could be redeveloped to make more optimal use of the land.

SECTION 10: Ring Rail South (Mitchell Street to Hartbeesspruit)

Conceptual Analysis

- The southern leg of the ring rail system ranges from Mitchell Street station in Pretoria West to Hartbeesspruit station in Hatfield.
- The western section forms the boundary between the commercial/ light industrial precinct along Soutter/ Charlotte Maxeke Streets and an institutional and government precinct.
- The line then passes along the border between the Inner City and Fountains Valley nature reserve.
- To the east the ring rail serves the high density residential area of Sunnyside, an institutional precinct including the University of Pretoria, and finally the Hatfield Node.
- Although the railway line then traverses Queenswood, there are no more railway stations up to Koedoespoort Industrial Area where it links into the northern leg of the ring rail.

1 and 2. Mitchell Street and Pretoria West Stations

- To the north of the two stations is the fully developed activity strips along Soutter and Charlotte Maxeke (formerly Mitchell) Streets.
- Land uses comprise commercial uses, service industrial and light industrial activities.
- To the south of the stations is a low intensity institutional precinct including Weskoppies Psychiatric Hospital and the SAPS College.

<ul style="list-style-type: none"> • There is no land available for infill or redevelopment within the two station precincts.
3, 4 and 5. Barracks, Bosman Street and Pretoria Stations
<ul style="list-style-type: none"> • Barracks and Bosman Street stations are located very close together, separated by Kgosi Mampuru (formerly Potgieter) Street. • The area to the north of the three stations falls within the Inner City and comprises a mix of business activities (retail and office), together with government functions and community facilities including a fire station and City Hall. • To the south the railway line are the Tshwane Correctional Services facility, Salvokop and Freedom Park museum/ landmark. Salvokop comprises offices and some residential development. • Pretoria station is a major modal interchange. It is one of three Gautrain stations in the City, together with Hatfield and Centurion.
<ul style="list-style-type: none"> • The pocket of vacant land to the south of Bosman station could be utilised for residential purposes. • There is some vacant land and low intensity development on Salvokop which could be redeveloped with mixed use development at higher densities.
6, 7 and 8. Mears Street, Devenish Street and Walker Street Stations
<ul style="list-style-type: none"> • The railway line forms a distinct border between the high density residential precinct of Sunnyside and the more suburban Mucleneuk/ Lukasrand area to the south. • The three stations all serve a mixture of medium to high density residential developments and schools or other community facilities to the north; and a well-established single residential precinct to the south. • The precinct to the south has a rather steep topography. • The Walker Street precinct includes limited retail activities and two parks to the north.
<ul style="list-style-type: none"> • Where single residential or other low intensity development remains to the north of the railway line, it is proposed that the erven be redeveloped at higher densities. • The single residential precinct to the south is unlikely to redevelop due to its character and topography. However, densification in the form of subdivisions and second dwelling units is desirable.
9. Loftus Versveldpark Station
<ul style="list-style-type: none"> • The station is situated adjacent to University Road. • There is an underpass to the land uses behind the station, though not directly to Loftus Versveld sport stadium.
<ul style="list-style-type: none"> • The station precinct is fully developed with institutional uses, apart from a small site to the

west of Loftus stadium which is earmarked for redevelopment.
10 and 11. Rissik and Hartbeesspruit Stations
<ul style="list-style-type: none"> • The two stations are located on either side of Hatfield Gautrain station. • Both serve the Hatfield node, though Rissik station is situated the closest to the University of Pretoria and the retail core of the node. • Hartbeesspruit station is situated adjacent to Jan Shoba (formerly Duncan) Street and serve the retail and commercial activities along it, as well as the residential precinct to the east of Jan Shoba.
<ul style="list-style-type: none"> • The Hatfield Gautrain station has been a catalyst for major redevelopment in the Hatfield Node. It is envisaged that the node will continue to redevelop with high densities, especially in close proximity to the station. • There is especially much potential for residential redevelopment to the east of Jan Shoba and the north of Arcadia Street.

Bus Rapid Transit (TRT) Trunk

System Structure

The TRT Trunk comprises four 'lines' or routes. In addition to the four trunk routes, some proposed amendments/ alternatives to Line 4 were also investigated. Furthermore, two links that form part of the network but are not incorporated into a trunk route were also investigated and are referred to as Line 5.

Similar to the railway stations, prominent land uses adjacent to the TRT trunk routes are highlighted. Furthermore, land within a 200m buffer of the routes was investigated to identify potential infill areas, or properties that has potential to be redeveloped – be they located in older areas, or developed at a low intensity etc.

TRT Line 1

LINE 1.1 KOPANONG TO INNER CITY

CONCEPTUAL ANALYSIS

- Kopanong Station where TRT Line 1 starts is a proposed mixed use node in Soshanguve South (see **Figure 31**).
- The TRT continues southwards to serve Rosslyn industrial area and the Akasia Metropolitan Node.
 - The line turns eastwards towards the Pretoria North CBD, and links to Wonderboom station/ Rainbow Junction.
- The TRT continues southwards through the Moot then enters the Capital Core/ Inner City via Paul Kruger Street.
- This section of Line 1 terminates at Pretoria Station in the south of the Inner City.

SECTION 1: Kopanong to Rainbow Junction

Prominent Land Use Features

- Soshanguve South/ Kopanong station was identified as an Emerging Node in the MSDF and it was proposed that the area around Kopanong station be developed as a mixed use/ multi-functional node.
- To date, infrastructure has been provided, internal roads constructed, the station upgraded, and a large bus and taxi rank have been constructed.
- A number of existing community facilities are also consolidated at the station, namely a clinic and MPCC, a community hall, and formal hawker stalls.
- The Precinct Plan for the Kopanong node proposed that land around the station be reserved for the consolidation of business activity (retail, motor-related trade and service industries).
- The precinct is however not well-used and the taxi and bus ranks remain unused, the proposed housing has not been developed and the commercial sites are still vacant. Also, some of the vacant land has been invaded by squatters, especially in the southern part of the station precinct.
- To the north-east of the railway line, the Safrich/ Thorntree View development includes the Thorntree View shopping centre in the vicinity of the PWV9-K216 intersection, a mix of housing types, community facilities, and a regional recreational resort/ precinct to the east of Kopanong station.
- The broader Soshanguve area comprises low density residential development, a few schools, and land pockets reserved for community facilities that are not yet developed, some of

which have been invaded by informal settlement.

- From Kopanong Station, TRT Line 1.1 continues southwards along route M20/ K63/ Doreen Avenue extension towards Rosslyn.
- The adjacent area is an infill area for Soshanguve East's southward expansion and is developing at a steady pace.
- Note that neither K63 (Doreen) nor K216 (Hebron) offer direct access to adjacent land uses.
- The Rosslyn Industrial Node comprises Rosslyn East, Rosslyn Industrial Area, and the Klerksoord Agricultural Holdings.
- Rosslyn and Rosslyn East are fully developed and comprise a variety of industrial activities, ranging from heavy industrial to light industrial and service industries. Klerksoord is a functional extension of Rosslyn to the east and is only partially developed.
- There is a small mixed use node near Rosslyn Industrial Area's main entrance at Piet Rautenbach Street.
- The TRT continues southwards through a predominantly low density residential area and links into the Akasia Node.
 - The activity node comprises the Wonderpark shopping centre, regional municipal offices, a post office, a clinic, and a library.
- The trunk route alignment along Doreen Avenue, First Avenue, and Heinrich Avenue up to Rachel de Beer Street effectively serves the Akasia Node.
 - The area around the Akasia node is fully developed with single and medium density residential development.
 - Line 1.1 continues past the Heatherdale Agricultural Holdings and through suburban Pretoria North to the Pretoria North CBD.
 - Surrounding land uses comprise low and medium density residential development, some community facilities and convenience retail establishments.
 - The Pretoria North CBD is predominantly concentrated along Gerrit Maritz Street just to the north of Rachel de Beer Street, and comprises a variety of land uses including light industries, retail (Northpark Mall), service industries, a range of government services, community facilities, two schools, and residential development.
 - Land uses along Rachel de Beer gain direct access from the road.
 - From the Pretoria North CBD Line 1.1 extends to Wonderboom Station.
 - Note that provision is made for the future extension of Rachel de Beer to link into Sefako Makgatho (formerly Zambezi) Drive to the east.

- Annlin and Annlin West to the east of Wonderboom Station currently comprise agricultural land and rural residential development but it will form part of a mixed use development initiative known as Rainbow Junction.

Functional Assessment

- The large vacant land pocket to the north of Hebron Road near Kopanong station is earmarked for residential infill development.
- The land between Soshanguve South and Rosslyn Industrial Area is an infill area for Soshanguve's expansion. Thus the land section along the TRT is earmarked for residential infill at medium to high density.
- Route M20/ Doreen Avenue extension forms the border of Rosslyn. Thus the land within the buffer zone and to the north and east of the road is earmarked for residential development.
- Vacant land parcels within Rosslyn is earmarked for industrial infill development.
- There is potential for densification along the section from Rosslyn to the Akasia Node. However, the township layouts are inward-facing. Thus, the area is likely to be relatively slow to densify/ redevelop.
- Vacant land parcels within and around the Akasia node were earmarked for infill development.
- Vacant land along Rachel de Beer could be developed at medium to high density. Areas where the township layout is open could be redeveloped a higher densities, whereas the sections where layouts are inward-facing are only earmarked for densification.
- The residential erven surrounding Pretoria North CBD should ideally be redeveloped at high densities to strengthen the activity node.
- The precinct around Wonderboom station (mixed use) forms part of the Rainbow Junction development and would be ideal for residential development.
- Towards Lavender Road, the railway line will discourage densification along the TRT route.

SECTION 2: Rainbow Junction to Zoo

Prominent Land Use Features

- The Wonderboom Junction shopping centre is situated at the northern end of the route section but is accessed via Lavender Road.
- TRT Line 1.1 briefly links into E'skia Mphahlele (formerly D.F. Malan) Drive just to the north of the Poort through the Magaliesberg mountain range. To the east and west of the intersection are the Wonderboom Nature Reserve and Mayville Mall respectively.
- The TRT continues along Mansfield Road. An activity strip has established along Paul Kruger Street which runs parallel to the west of Mansfield Road.

<ul style="list-style-type: none"> • Community facilities along the route section up to the Pretoria Zoo include a park, sportgrounds, Eugene Marais hospital, two schools, a police station, a library, and a post office. • The TRT route continues southwards past Capital Park station. • As discussed, Council has earmarked the large vacant land parcel to the west of Capital Park Station for residential infill development. • Next, the TRT serves a second activity strip along Paul Kruger Street. • Note that the Apies River regional drainage system traverses the Moot area from north to south. This limits accessibility to certain parts of the otherwise grid road layout.
Functional Assessment
<ul style="list-style-type: none"> • Medium density housing is encouraged along either side of Mansfield Avenue to support the activity strip along Paul Kruger Road. • As mentioned, the logistics-related infrastructure at Capital Park East could be move to the new Pyramid node – in which case the precinct could be redeveloped with extensive residential development. • The Capital Park West precinct is earmarked for residential infill. • It is proposed that a strip of erven along either side of Mansfield Avenue be reserved for non-residential or mixed use to facilitate the continuation of the Paul Kruger activity strip. • The residential erven surrounding the Paul Kruger activity strip could be redeveloped at higher densities.
SECTION 3: Zoo to Pretoria Station
Prominent Land Use Features
<ul style="list-style-type: none"> • To the north-east of the Inner City is an institutional precinct including Prinshof School, the Nurse's Training College, Damsa International College, Prinshof School, Femina Clinic, Pretoria Academic Maternity Hospital, the Orthopaedic Hospital, Medical Research Council, and the Oud Studente Unie Sportsground. • The far north-western parts of the CBD, along Boom, Bloed and Struben Streets comprise service industry-type uses. • The trunk route passes the Zoo campus located at the intersection of Paul Kruger and Boom Streets. The entrance is along Boom Street. • The north-eastern quadrant of the CBD comprises a number of shopping centres, including Sammy Marks. • Immediately to the north are the City of Tshwane offices (Munitoria) which are currently being refurbished.

- A number of historic buildings surround Church Square, some of which are occupied by offices. Prominent uses include the Palace of Justice, National Treasury, and the national library.
- A number of prominent business and government uses are located between Church Street and Nana Sita, including the SA Revenue Services, the State Theatre and Lilian Ngoyi Square further to the north, and the Government Printers to the west of Paul Kruger.
- Other prominent land uses in the vicinity include the Pretoria Magistrates Court, the SA Police Services, the Sanlam Centre, the SA Revenue Services, the State Model School, the State Theatre and Lilian Ngoyi Square, the Louis Pasteur and Medforum Hospitals, and several government departments.
- Prominent land uses in the south-western quadrant are the Pretoria City Hall, three museums of national significance, the SA Navy Headquarters, the Pretoria Municipal Court, and the fire station.
- The south-eastern quadrant of the intersection between Paul Kruger and Nana Sita Streets predominantly comprises medium to high density residential uses supported by the Little Theatre, and a satellite office of the University of South Africa (UNISA).
- TRT Line 1.1 terminates at Pretoria Station in the south.

Functional Assessment

- Two precincts that form part of the Inner City student accommodation precinct in the north and that fall within the TRT buffer zone were earmarked for redevelopment.
- However, the remainder of the Inner City is fully developed at relatively high intensity. No other strategic interventions are proposed.

LINE 1.2 INNER CITY TO MAHUBE VALLEY

SECTION 1: Paul Kruger to Menlyn

CONCEPTUAL ANALYSIS

- From the Inner City Line 1.2 continues eastwards along Nana Sita (formerly Skinner) Street .
- It serves the high density residential area of Sunnyside as well as a predominantly institutional precinct before linking into the Hatfield Node.
- From Hatfield the TRT continues to Menlyn, through a predominant low density residential environment.
- The Menlyn Node is a Metropolitan Node and one of the City's most prominent decentralised nodes.
- Line 1.2 forms a circular route through both the Hatfield and Menlyn Nodes.

Prominent Land Use Features

- The buildings located directly adjacent to the north of Nana Sita Street do not front towards the street. This is due to the fact that the road reserve for Nana Sita Street was widened to the north in the late 1980's in order to construct the second carriageway and the median. Subsequently, the row of buildings which originally fronted onto Nana Sita/ Skinner Street was demolished.
- Since then a narrow strip of business developed at a relatively low intensity on the remainder part of the erven to the north of Nana Sita Street.
- Two fairly large sites along Nana Sita Street namely at the intersections with Andries and with Sisulu (formerly Prinsloo) respectively are still vacant and could be utilised in future to strengthen activity along Nana Sita Street.
- The remainder of the area is fairly intensely developed with multi-storey office, mixed use and residential developments.
- The land uses surrounding the TRT alignment in the Sunnyside section are predominantly high density residential.
- The Esselen Street business strip is located about 200 metres/ one block to the north of Kotze Street along which the TRT will run, and there is a small business node (Midcity Square) at the eastern end of Jorissen Street.
- The residential area is supplemented by a wide range of community facilities which include:
 - Several churches both to the north and south of the route;
 - The Oeverzicht Art Village and Breytenbach Theatre towards the south-western end;
 - UNISA Sunnyside Campus and Sunnyside Primary School;
 - Several medical institutions including the College Medical Centre, Curamed Hospital and Gynaecological Centre, and Jacaranda Hospita towards the south-east;
 - Three prominent parks located directly adjacent to the proposed TRT route, including Jubilee Square, the Sunnyside Swimming Pool and the Sunnyside Tennis and Bowling Club.
 - Two tertiary training facilities.
- The far-eastern section of Sunnyside around Jorissen Street comprises low density residential development, with a number of houses being utilised for office purposes.
- Most of the buildings located along this section front towards Kotze-Jorissen Streets, and pedestrian movement along the sidewalks is a prominent feature in this densely populated area.
- From here, the TRT serves a large institutional precinct, including:

- The Loftus Versfeld Sports Stadium adjacent to the north of Lynnwood Drive.
 - Afrikaans Hoër Seunskool to the south of Jorissen Street with Afrikaans Hoër Meisieskool and Pretoria East Dutch Reformed Church.
 - To the north-east of the stadium is Pretoria Girls High School while Pretoria Boys High School is located further to the south on the opposite side of the railway line.
 - This precinct also comprises a portion of the campus of the University of Pretoria and the Laerskool Pretoria Oos.
 - Adjacent to the north on the opposite side of Lynnwood Drive is the University of Pretoria (UP) main campus.
- The TRT would require special engineering measures to be put in place to ensure that movement of pedestrians and vehicles, as well as on- and off-loading activities of learners are not severely constrained.
 - The proposed TRT Line to Hatfield Gautrain Station passes along the western boundary of the university campus via University Road.
 - The TRT then links into the Hatfield activity node via Burnett Street from where it follows the alignment of Hilda and Arcadia Streets, links to the Hatfield Gautrain Station and then back along Grosvenor Street to again link up with Burnett Street.
 - The circular TRT network serves the central parts of the Hatfield Activity Node very well by linking the areas to the north and south of the railway line, and by running along the main activity spine through the Hatfield Node (Burnett Street).
 - Burnett Street serves Hatfield Square, Hatfield Plaza and The Fields – the main developments in the activity node.
 - The Prasa offices as well as Rissik/ Hatfield railway station also form part of this precinct.
 - From the split at University Road, the trunk route continues eastwards along Lynnwood Road, serving the University of Pretoria campus to the north thereof, and the predominantly low density residential areas of Brooklyn to the south.
 - The TRT alignment directly serves all three the main entrances to the University of Pretoria along University and Lynnwood Drive.
 - All houses to the south fronting onto Lynnwood Drive currently take direct access from this road.
 - In the vicinity of the Lynnwood-Jan Shoba (Duncan) Street intersection is the Brooklyn Centre with a small concentration of offices and flats.
 - The Hillcrest Boulevard Shopping Centre is located to the north of Lynnwood Drive about 300 metres further to the east.
 - There are a number of guest houses, churches and embassies located in the Brooklyn area to the south of Lynnwood Drive. There are, however, no major community facilities of regional

significance within 200 metres along this section of Lynnwood Road.

- The TRT section between Lynnwood and Menlyn, along Atterbury Road, passes through an extensive range of land uses.
- The western end of the section serves the Lynnwood business strip and office node to the south and the University of Pretoria men's hostels precinct to the north.
- From here it extends in an easterly direction along a strip of low intensity mixed-uses up to the Atterbury Road intersection. Properties to the south of this section of Lynnwood Road get direct access from Lynnwood Road, while the properties adjacent to the north get access from Queens Crescent.
- At the Lynnwood-Atterbury intersection the TRT continues along Atterbury Road.
- The Menlopark and Lynnwood area is predominantly single residential, but includes two schools, the Menlo Park Shopping Centre, Atterbury Theatre, and The Village activity node.
- Atterbury Road then leads into a small concentration of offices, guesthouses, townhouses and a filling station at the intersection with Justice Mahomed (formerly Charles) Street.
- From here the TRT extends into the Menlyn Node and up to Lois Avenue where it makes a loop along Aramist and January Masilela (Louis Botha) Streets.
- Prominent land uses within the Menlyn Node include Menlyn Park Mall, Menlyn Retail Park centre, the new Menlyn Maine mixed use development, and Plantland nursery.
- The TRT alignment serves the northern parts of the Menlyn Node well, but the variety of office, retail and commercial activities located along Garstfontein Drive is not within walking distance of the TRT.

Functional Assessment

- The erven in Sunnyside that are not yet developed at high density could be redeveloped at higher densities.
- The Hatfield Gautrain has sparked major redevelopment in and around the Hatfield Node. All known developments have been indicated.
- Township layouts along the relevant sections of Lynnwood and Atterbury Roads are open/grid-like, and have potential to be redeveloped. Higher densities are desirable, especially due to their proximity to the Hatfield activity node.
- Mixed use (re)development is proposed where non-residential uses have already started to establish.
- Vacant erven within the Menlyn Node will likely accommodate infill business development.

SECTION 2: Menlyn to Mahube Valley

CONCEPTUAL ANALYSIS

- From the Menlyn Node, Section 2 of Line 1.2 continues northwards along January Masilela (formerly General Louis Botha) Drive and eastward at the intersection with Lynnwood Road, which is a mixed use activity strip.
- The TRT turns northwards along Simon Vermooten Drive, passes through a low density residential area, to serve the Waltloo industrial precinct.
- The last section along Tsamaya Avenue in Mamelodi will link with Denneboom and Eerste Fabrieke stations, and terminate at Mahube Valley shopping centre to the east of Mamelodi.

Prominent Land Use Features

- The area to the west of January Masilela comprises low density residential development except for a small mixed use node around the Glenwood Shopping Centre and Atrium office complex, including St Alban's College and flats.
- There is also a concentration of professional services at the intersection of January Masilela and Glenwood Road.
- To the east of January Masilela is the Faerie Glen Hospital surrounded by a concentration of townhouse complexes and offices.
- The land uses in this section all front away from January Masilela and gain access via Ingersol and Glenwood Roads.
- The Moreleta Spruit regional open space system traverses the Pretoria East area, though it is rather neglected and not at all integrated with the built fabric.
- To the north lies the Faerie Glen Nature Reserve and Sungardens Hospice.
- At the intersection with Lynnwood Road lies the Glen Gables centre, and it is surrounded by townhouses and offices.
- As mentioned, the section of Lynnwood Road up to Simon Vermooten has become an emerging activity strip.
- Adjacent to the north of Lynnwood Road is Lynnridge Mall and Willow Way Centre, a variety of smaller retail and office establishments, as well as three schools. Densification is also evident in the form of townhouse complexes/ flats.
- Access to adjacent residential areas is gained via secondary roads.
- To the south of the road are the Gift Acres Centre, Safari Nursery Centre, as well as a variety of smaller retail establishments, restaurants/ coffee shops and some townhouse- and office complexes.
- A concentration of retail, commercial and community facilities are found at the intersection

of Lynnwood and Simon Vermooten Way, including The Grove shopping Centre, motor dealerships, a new office development, the Wilgers Hospital, a filling station, restaurant, and townhouses.

- The TRT turns northwards along Simon Vermooten Drive, which is currently being upgraded to a dual-carriageway.
- The residential areas to the west of Simon Vermooten up to route R104 (old Pretoria/ Bronkhorstspuit Road) predominantly comprise single residential development, with some townhouse complexes especially in La Montagne.
- The precinct to the east of Simon Vermooten comprises almost wholly of security estate developments and there is a notable lack of business activities or community facilities.
- Non-residential uses within walking distance of the TRT along Simon Vermooten are limited, but include two shopping centres, namely Willows Crossing and Equestria Gateway Centre, and two schools.
- To the north of route R101 are the Waltloo industrial area and Samcor industrial park, a significant employment centre in the City. Activities include service industries, light industries and general industries.
- At the intersection with Waltloo and Stormvoël Roads the TRT links into Waltloo Road and passes under the railway line.
- To the west of the intersection between Waltloo and Stormvoël Roads lies Eersterust and to the east, Mamelodi.
- The last section of TRT Line 1.2 runs along the length of Tsamaya Avenue, traversing the Mamelodi settlement, and terminates at Mahube Valley shopping centre.
- Mamelodi mostly comprises single and medium density residential, interspersed with small concentrations of retail activities, community facilities and numerous educational facilities.
- The Denneboom station precinct, also known as the Solomon Mahlangu precinct, is essentially the western gateway to Mamelodi.
- Land uses include the Mamelodi Crossing shopping centre, Mini-Munitoria municipal offices, a post office, and sports facilities.
- The Top 20 Priority Townships Programme (PTP)/ Neighbourhood Development Partnership Grant (NDPG) activity node known as the Mamelodi T-section falls within walking distance of the TRT.
- The T-section Node comprises a mix of retail and community facilities including a post office, police station, clinic and schools.
- There is also a concentration of community facilities around the Eerstefabrieke Station, including Mamelodi Hospital, Mamelodi Health Care Centre, an FET College and a few schools.

- Another two concentrations of retail activities and community facilities are found further along Tsamaya and are served by the TRT.
- Tsamaya Avenue is relatively narrow and has a very narrow road reserve, which is mostly occupied by informal traders, illegal accesses etc.

Functional Assessment

- Sections along January Masilela Drive that enjoy direct access to the road should preferably be redeveloped at higher densities (see **Figure 33.2**). Sections where access is limited should preferably at least densify through second dwelling units and subdivisions.
- Properties along the relevant section of Lynnwood Road should also at least be densified, while vacant land pockets are reserved for medium to high density residential infill development.
- Although the security estate developments along Simon Vermooten are not likely to respond to densification criteria, they are earmarked for densification as they fall within the buffer zone.
- Remaining vacant land parcels along Simon Vermooten are reserved for infill residential development.
- Mamelodi is fully developed, but the pockets of informal settlement towards the east and within the buffer area are earmarked for redevelopment.
- The vacant land pockets on either side of Mahube Valley shopping centre would be ideal for infill residential development.

TRT Line 2

LINE 2: INNER CITY TO ATTERIDGEVILLE

CONCEPTUAL ANALYSIS

- TRT Line 2 originates at Church Square in the Inner City, and continues westward along Church Street.
- The first section of Line 2 thus serves the Inner City with its variety of business activities, community facilities and government functions.
- Land uses adjacent to Church Street West comprise a variety of business activities.
- The TRT trunk links into Quagga Road and traverses Pretoria West – a well-established middle-income residential area.
- To the south of Quagga Road are the Pretoria West Industrial Area and Mittal Steel.
- The TRT alignment turns west onto Maunde Street and enters Atteridgeville to terminate at

<p>Saulsville Station.</p> <ul style="list-style-type: none"> • Atteridgeville is a fully developed mixed income residential area. • Atteridgeville and Saulsville townships are bordered by the railway line to the north and the ridges of Kwaggastrant to the south.
SECTION 1: Paul Kruger to Maunde (Pretoria West)
Prominent Land Use Features
<ul style="list-style-type: none"> • At Church Square TRT Line 2 links into Line 1. • The erven adjacent to either side of Church Street comprise predominantly business activities. To the north of Church Street lies the Hero's Acre cemetery, whereas the Munitoria buildings and -bus depot are located to the south. • To the west of E'skia Mphahlele Drive is the Tshwane Events Centre which is accessed from Church Street. • From here and up to Buitenkant Street adjacent land uses comprise a mix of business activities and medium density residential uses. • The Quagga Centre is situated at the intersection between Church Street and Quagga Road. • The entire residential precinct to the north and south of Church Street was earmarked for residential densification in the CoT Human Settlement Plan. • Note that the railway line traverses the precinct from north to south but the closest station is Mitchell Street Station to the south. • The TRT continues westward along W.F. Nkomo Street (Church Street extension) into suburban Pretoria West. • Located within the strip of land between the N4 freeway and W.F. Nkomo Street is the Pretoria West Golf Course, a small residential township, the Lucas van den Berg sportsground, the Transoranje School for the Deaf, and a filling station. • There is a residential precinct to the south of W.F. Nkomo.
Functional Assessment
<ul style="list-style-type: none"> • The vacant site to the north of the Hero's Acre cemetery has potential for infill development. • Single residential erven within the TRT buffer zone in Pretoria West should ideally be redeveloped at higher densities (see Figure 34.2). • The erven adjacent to Rebecca Street are reserved for mixed use redevelopment to strengthen the existing activity strip. • Properties along Transoranje Road have limited access and are thus only earmarked for

densification.

- The land to the north of Quagga Road forms part of a regional drainage system and is thus undevelopable.
- To the south of Maunde Drive is a vacant pocket of land which is earmarked for industrial development.

SECTION 2: Quagga Road to Saulsville Station

Prominent Land Use Features

- The TRT turns southwards along Maunde Drive towards Atteridgeville. The vacant land on both sides of the road is zoned for industrial use.
- The TRT passes through the Predustria/ SAPS Dog School land.
- Atteridgeville is a fully developed residential area with a range of supportive uses including educational, health, sports and recreational facilities.
- The Attlyn Retail Centre and Atteridgeville cemetery are located near the entrance to the township.
- A prominent mixed use node is found at the intersection of Hlahla and Mareka Streets, comprising the Lucas Moripe Stadium, a police station, magistrate's court, library, municipal offices, a recreation centre, primary school as well as some retail and commercial uses.
- Land uses to the south of the road are primarily residential, and include a number of schools.
- To the south of Kwaggasrant lies Laudium but there is currently no functional link between the two communities.
- The TRT continues along Maunde and Makhaza Streets
- *En route*, the route passes by the Black Rock sportsground, two municipal clinics, a few small businesses, the redeveloped Atteridgeville hostels and the Saulsville/ Masopha sports grounds.
- Line 2 terminates at Saulsville Station, a Metropolitan Urban Core. The activity node includes a fire station, post office and small police facility.
- The Saulsville/ Masopha Sports Ground, two primary and two secondary schools, as well as a commercial area are located nearby. The latter is in a dilapidated state.
- The large land pocket at the station is reserved for retail but remains vacant.
- To the north of the railway line lies the Pretoria Metal Pressing (PMP) site.

Functional Assessment

- There is very little potential for (re)development along the latter part of TRT Line 2.
- Land adjacent to the road in Atteridgeville is densely developed up to the road reserve. This leaves little space for infill development though there are opportunities for redevelopment.
- Similar to the proposed station's precinct, the portion of the Dog School land that falls within the TRT buffer zone is earmarked for residential infill development .

TRT Line 3

LINE 3 SEFAKO MAKGATHO LINK

CONCEPTUAL ANALYSIS

- TRT Line 3 is a relatively short link from Wonderboom Junction shopping centre, along Sefako Makgatho (formerly Zambezi) Drive eastward .
- The route section comprises a number of retail establishments including Kollonade and Zambezi Junction shopping centres.
- The retail and commercial developments are interspersed by, and surrounded with low and medium density residential development of Pretoria North.
- Regional community facilities along the route include a number of schools and Montana private hospital.
- The alignment passes under the N1 freeway and through a more rural area up to the Zambezi China Mall, where it turns southwards along Baviaanspoort Road.
- It continues past Baviaanspoort Prison and along a proposed road parallel to the regional drainage system to the west of Eersterust, until it links into Stormvoël Road.
- From here it continues eastwards to Denneboom Station in Mamelodi and links into Line 1.

SECTION 1: Rainbow Junction to Zambezi Mall

Prominent Land Use Features

- TRT Line 3 begins at Rainbow Junction/ Wonderboom Junction shopping centre where it links into Line 1, and continues along the eastern leg of the 'loop' around Annlin.
- The route serves the concentration of retail and commercial activities along Lavender Road heading to Sefako Makgatho Drive where it turns eastward.
- The route section between Lavender Road and Zambezi Mall runs parallel to the north of the Magaliesberg ridge.
- The section up to the Montana Crossing shopping centre comprises low and medium density

<p>residential development, as well as a number of schools though the latter often fall just outside of the 200m boundary of the TRT.</p> <ul style="list-style-type: none"> • The following section up to the N1 freeway comprises a few shopping centres including Kolonnade, Kolonnade Retail Park and Montana Water Front. • At the intersection with Baviaanspoort Road is the Zambezi China Mall.
Functional Assessment
<ul style="list-style-type: none"> • Single residential erven along both sides of Sefako Makgatho (Zambezi) Drive between Wonderboom Junction and Kolonnade shopping centre should preferably be redeveloped at higher densities. • A small section is earmarked for mixed use redevelopment to strengthen the emerging activity strip. • Vacant land parcels towards Baviaanspoort Road are earmarked for residential and business infill development. • Vacant land to the east of Waltloo station and north of Stormvoël Road is earmarked for industrial use.
SECTION 2: Zambezi Mall to Denneboom Station
Prominent Land Use Features
<ul style="list-style-type: none"> • The following route section is along Baviaanspoort Road passes in between Jan Niemand Park and Eersterust. • The Derdepoort Resort is situated to the west of the road and Baviaanspoort Prison to the east. • A number of schools, as well as retail activities and additional community facilities are located on either side along the route section. Yet direct access is not currently facilitated as the route is still proposed. Care should be taken to allow access to adjacent communities via the regional drainage system. • The TRT then links into Stormvoël Road and heads eastward. • It runs along the northern border of Waltloo Industrial Area, parallel to the railway line, and links into TRT Line 1 at Denneboom station in Mamelodi. • As mentioned, Denneboom is a mixed use precinct with retail activities and community facilities, and is the largest node in Mamelodi.
Functional Assessment
<ul style="list-style-type: none"> • The vacant land along Baviaanspoort Road could comprise residential development .

LINE 4: SOUTHERN LOOP
CONCEPTUAL ANALYSIS
<ul style="list-style-type: none"> • TRT Line 4 forms a loop from the eastern suburbs through Centurion and may be divided into five functional sections. • The first is from Menlyn to Solomon Mahlangu along January Masilela. • Apart from the Menlyn Node, this route section is predominantly residential in nature, and serves a few schools. • The second route section is fairly long and runs along Solomon Mahlangu Drive from the intersection with January Masilela, over the R21 freeway, up to route K101 at Hennopspark. • The section through Pretoria East passes by a few retail and a number of schools, while the following section through Centurion passes through the Centurion CBD (Verwoerdburgstad), as well as the Waterkloof Air Force Base and a number of schools including Waterkloof High School. • Section 3 stretches from Hennopspark up to Sunderland Ridge, along route K101 and Wierda Road. • The adjacent land uses are fairly low intensity including low density residential, Zwartkop Air Force Base and Zwartkop Nature Reserve. • The fourth section of Line 4 runs northwards along route K69/ R55/ Quagga Road from Sunderland Ridge to the Pretoria Industrial Area/ Nywerheid Station. • It passes the Zwartkops Raceway and serves Laudium – a predominantly Indian community – to the west of the route. • Here it overlaps with a section of TRT Line 2, but Line 4 continues northwards from the intersection with Church Street along Transoranje-Bremer-R80 up to Rachel de Beer where it once more links into Line 1. • This final section of Line 4 serves a predominantly single density and rural residential precinct.
SECTION 1: Menlyn to Solomon Mahlangu (January Masilela)
Prominent Land Use Features
<ul style="list-style-type: none"> • Community facilities along the January Masilela route section between Menlyn and Solomon Mahlangu include three schools and two churches including Hatfield Christian Church .

<ul style="list-style-type: none"> • There is one small shopping centre. • The remainder of the land uses along the route section comprise single density residential erven which do not take direct access from the route. • The Moreletakloof Nature Reserve is located at the intersection with Solomon Mahlangu, but access is provided from Rubenstein Road on the far side.
Functional Assessment
<ul style="list-style-type: none"> • Although the township layouts along January Masilela are inward-facing they should preferably densify/ redevelop.
SECTION 2: January Masilela to Hennopspark/ K101
Prominent Land Use Features
<ul style="list-style-type: none"> • The eastern part of this section passes through the single and medium density residential areas of Waterkloof and Elarduspark. • A number of community facilities are consolidated in Elarduspark to the south of the road, and there are four schools in close proximity . • Land uses along Solomon Mahlangu do not take direct access from the road. • To the west of the N1 and R21 interchange lies the Waterkloof Air Force Base, a low intensity land use. • Line 4 turns southward along Botha Avenue and runs parallel to the metro railway line up to Lyttelton station. • An activity strip has established along this section of Botha Avenue and land uses range between retail and auto-related service industries. • The surrounding suburban area comprises mostly single density residential erven, together with a few schools and a small industrial area and government precinct in the south. • The TRT continues westward along Gerhard Street toward Centurion Gautrain station and the Centurion CBD/ Verwoerdburgstad, including Centurion Mall. • The residential fabric around the CBD is notably more dense (medium density). • After passing through a small residential section, the TRT serves the industrial area in Hennopspark.
Functional Assessment
<ul style="list-style-type: none"> • Where accessibility to the north of Solomon Mahlangu Drive is limited, properties are earmarked for densification (see Figure 36.4). Where there is still vacant land, infill development should preferably be at medium to high densities.

<ul style="list-style-type: none"> • Properties within the buffer area in Lyttelton could be redeveloped at higher densities. • A large area of the Centurion CBD around Centurion Gautrain station is to be redeveloped with a mixture of business and residential uses. • Further west, vacant land parcels will likely be developed for residential use. Those within the buffer zone should preferably densify/ redevelop though there is limited access to the erven along Old Johannesburg Road (R101).
SECTION 3: Hennopspark to Sunderland Ridge (K101/ K69)
Prominent Land Use Features
<ul style="list-style-type: none"> • Section 3 of Line 4 passes through a low intensity area comprising single density residential development, the Zwartkops Golf Estate, Zwartkops Air Force Base and Zwartkops Nature Reserve. • The area includes a number of schools though only one is located within 200m of the TRT alignment. • To the west of the intersection between Wierda Road and route R55/ K69 lies the Sunderland Ridge industrial area.
Functional Assessment
<ul style="list-style-type: none"> • Developable land along Wierda Road is limited but where possible, infill development should be accommodated. • There is some potential for infill development within Sunderland Ridge Industrial Area.
SECTION 4: Sunderland Ridge to Maunde
Prominent Land Use Features
<ul style="list-style-type: none"> • The TRT continues northwards along route R55/ Quagga Road, past Zwartkops Raceway . • To the north Line 4 serves the Laudium community situated to the west of the route. A few community facilities and one school fall within the TRT buffer, but the TRT will also serve the broader community including many schools and an activity node. • Directly opposite Laudium lies Thaba Tshwane, the military grounds. • Line 4 links into Line 2 at Pretoria Industrial Area (Maunde Drive).
Functional Assessment
<ul style="list-style-type: none"> • There is almost no potential for infill or redevelopment along this section of route R55/ Quagga Road. The only development potential is namely to the east of the road at Laudium.
SECTION 5: WF Nkomo Street to Brits Road
Prominent Land Use Features

- The final section of Line 4 links Atteridgeville, via the Moot, with the Akasia Node in Pretoria North.
- The first section along Transoranje Road serves the Danville community. Land uses adjacent to the TRT alignment are mostly residential, apart from the Pretoria West Hospital.
- Next, the alignment goes through the Daspoort tunnel of the Magaliesberg mountain range and continues along Bremer Street.
- The TRT passes over the Van der Hoof railway line section though it does not intersect with a station precinct.
- The land uses adjacent to Bremer Street are predominantly single density residential erven, together with three schools that fall within the TRT buffer.
- The broader area comprises a number of schools.
- From Bremer Street the TRT links into the R80/ Mabopane freeway – a link that has to be constructed – over the Magaliesberg mountain ridge and up to the Akasia Node at the intersection of Rachel de Beer and Brits Roads.
- The adjacent Andeon area is rural residential in nature.

Functional Assessment

- Within Pretoria West, brownfield properties that fall within the TRT buffer zone along Transoranje and Bremer Streets could all be redeveloped at higher densities (see **Figure 36.10**). Vacant erven along these road sections are ideal for infill residential development.
- The strip of vacant land to the north and south of John Vorster Road is part of an infill area of the Moot and Pretoria North.
- The gradient is too steep for development along the Mabopane freeway. Also, land uses along this final section of Line 4 do not take direct access from the freeway and are thus unlikely to be affected by the TRT.

TRT Line 4 Alternative

CONCEPTUAL ANALYSIS

- Solomon Mahlangu Northern Extension:
 - Solomon Mahlangu forms a 'loop' around the eastern suburbs, thereby also serving the Far East, and links into Mamelodi at Mahube Valley shopping centre where TRT Line 1 terminates (see Figure 36).
 - The central section of this route section comprises a concentration of retail, commercial and industrial establishments that are not yet served by the TRT.

- Johan Heyns-Rooihuiskraal-Ruimte-R55:
 - This alignment of the TRT trunk will additionally serve the Mall at Reds shopping centre at the intersection of Rooihuiskraal and Johan Heyns (formerly Hendrik Verwoerd) Roads, as well as the Monavoni area to the west of route R55 where large-scale residential infill development is envisaged in the short to medium term.

SOLOMON MAHLANGU: January Masilela to Tsamaya (Mahube Valley)

Prominent Land Use Features

- The Moreletakloof Nature Reserve is situated to the south of the intersection between Solomon Mahlangu and January Masilela (formerly General Louis Botha) Drive, but it is accessed from the south.
- There is a small activity node at the intersection of Garstfontein and Delfi Roads to the south of Solomon Mahlangu, and the Denmar Psychiatric Hospital and Eastdale Pavilion/ Village Centre are situated along the road section between Delfi and Atterbury.
- The remainder of adjacent land uses up to Atterbury Road comprises a mixture of single and medium density residential development, facing away from the road.
- From Atterbury to Lynnwood Road the precincts to the west and east of Solomon Mahlangu comprise well-established predominantly single residential development.
- There is a small activity node at the intersection with Haymeadow Crescent in the Boardwalk area, comprising retail, office park developments, a gym and restaurants.
- A second small cluster of business activity is found at the intersection with Old Farm/ Olympus Road, namely Glen Village Centre.
- The area between Lynnwood Road and the N4 freeway used to have a predominantly rural character. However, over recent years, it has experienced high development pressure and is now characterised by various security estate developments of low to medium density.
- To the west of Solomon Mahlangu is Equestria and to the east are Silver Lakes Golf Estate, Tijger Vallei and Willow Acres.
- Adjacent to the eastern side of Solomon Mahlangu are a number of retail and wholesale/ commercial establishments, including Six Fountains Lifestyle Centre and Silver Oaks Crossing shopping centre.
- The recently established N4 Gateway Industrial Area is situated in the north-western quadrant of the access interchange onto the N4 freeway. The precinct enjoys excellent visual exposure and a few erven have already been developed.
- The precinct to the east of Solomon Mahlangu between the N4 freeway and the railway line is rural in nature.
- Nellmapius settlement lies to the west of the road. The eastern part of the township

<p>comprises informal settlement that extends up to Solomon Mahlangu Drive.</p> <ul style="list-style-type: none"> • The vacant land pockets along the route has development potential. • The railway line forms the southern border of Mamelodi, which extends to both sides of Solomon Mahlangu. • A few very small concentrations of retail/ business activities and community facilities may be discerned along the TRT section up to Mahube Valley, including the Vista University Campus and an array of primary and secondary schools. • The surrounding land is fully developed with medium density housing.
Functional Assessment
<ul style="list-style-type: none"> • Seeing as the precinct between January Masilela and Atterbury Road are inward-facing, they are earmarked for densification only. • A number of single residential properties remain adjacent to the east of Solomon Mahlangu and south of the N4 freeway. These should also ideally be densified. • To the north of the freeway, all vacant land within the buffer zone has potential for infill development. • Areas within Mamelodi that comprise informal settlement should be redeveloped at medium density. • As indicated earlier, the vacant land pockets on either side of Mahube Valley have potential for infill development.
Johan Heyns-Rooihuiskraal-Ruimte-R55
Prominent Land Use Features
<ul style="list-style-type: none"> • The Hennopspark industrial area is situated to the east of Old Johannesburg Road (R101) but is already served by the TRT trunk (Line 4 original alignment). • Adjacent land along the proposed TRT section of Johan Heyns Road comprises single residential development, as well as one primary school. • There is a shopping on either side of Johan Heyns at the intersection with Rooihuiskraal Road, including the Mall at Reds. • Land uses do not take access from Johan Heyns or Rooihuiskraal Roads. • The TRT turns northwards, serving a variety of single and medium density residential developments though all are inward-facing. • There are pockets of vacant land adjacent to the section of Ruimte Road up to route R55. • Along the western section of Ruimte Road (closest to R55) the precinct to the south comprises predominantly single residential development and the one to the north

predominantly medium density residential development.

- To the west of route R55 is the Monavoni area which is earmarked for residential infill development and is experiencing increasing development pressure.
- To the north the TRT will directly serve the Sunderland Ridge industrial area situated to the west.

Functional Assessment

- Single residential properties along Johan Heyns and Rooihuiskraal Roads are earmarked for densification seeing as all the township layouts are inward-facing (see **Figure 36.16**).
- Vacant land within the buffer zone along the remainder of the proposed alternative along Ruimte Road and route R55 has potential for infill development, while properties that are developed at low intensity should ideally be redeveloped at medium to high density.

Additional Links

CONCEPTUAL ANALYSIS

- The Lynnwood link from Atterbury Road to Simon Vermooten Road serves as an extension of TRT Line 1, while the Atterbury link from January Masilela Drive to Solomon Mahlangu Drive provides a link between TRT Line 1 and proposed Line 4.
- The *Lynnwood link* provides continuity along the IRPTN along Lynnwood, but also links to the relatively new activity node at the N1 interchange, including Lynnwood Bridge and Glenfair centres.
- The *Atterbury link* serves a number of retail centres *en route* to Solomon Mahlangu, while also serving the suburban Old East including Faerie Glen and Garsfontein.

LYNNWOOD LINK: Atterbury to Simon Vermooten

Prominent Land Use Features

- There are three sports complexes along the route section, as well as three schools (see **Figure 37.1**).
- There is a small retail, entertainment and community node along Rodericks Road to the south of Lynnwood.
- Furthermore, the Lynnwood Bridge development including retail, hotel and office uses is situated at the N1 interchange, with the refurbished Glenfair Centre directly adjacent to the east.

<ul style="list-style-type: none"> Land uses do not take access from Lynnwood Road. The TRT links into Line 1 at the Glen Gables centre at the intersection with January Masilela Drive, which is also surrounded by townhouse developments.
Functional Assessment
<ul style="list-style-type: none"> Because the township layouts adjacent to this section of Lynnwood Road are all inward-facing, the residential erven are earmarked for densification only.

ATTERBURY LINK: January Masilela to Solomon Mahlangu
Prominent Land Use Features
<ul style="list-style-type: none"> The precinct along the northern side of Atterbury Road, between January Masilela Drive and Oberon Avenue comprises mostly office complexes. The Faerie Glen hospital is located on both sides of Atterbury at the intersection with Oberon Avenue. A pedestrian bridge connects the two parts with one another. The precinct between Manitoba Drive and Glenwood Road comprises mostly medium density development in the form of townhouse complexes, while the area to the south of Atterbury comprises predominantly single residential development. The latter face away from Atterbury and is accessed via secondary routes. At the intersection with Manitoba Drive is a convenience centre, Atterbury Boulevard with shops, restaurant, community facilities, and a filling station. To the east at the intersection with Selikats Causeway is the Pick 'n Pay Hypermarket, a filling station and a convenience centre. To the south thereof are two retail centres namely Atterbury Value Mart and Atterbury Décor Centre. The remainder of the road section, up to Solomon Mahlangu Drive, comprises predominantly single residential development. Atterbury Road has a wide road reserve which could accommodate additional lanes for TRT and adjacent land uses do not take direct access from Atterbury Road.
Functional Assessment
<ul style="list-style-type: none"> Because the township layouts adjacent to this section of Atterbury Road are all inward-facing, the single residential developments are earmarked for densification only. There is potential to integrate the Moreleta Spruit with the surrounding built environment to augment the supply of public open space in the precinct.

Conclusions: Rail and TRT Development Potential

Table 50 gives a summary of the developable land area within station precincts and along the TRT trunk routes. Note that the three residential categories used in the analysis were combined as a single 'Residential' category on the maps. The table and figures give a good indication of the comparative development potential for the railway stations and the respective TRT lines.

Table 50: Developable Land (Residential and Non-Residential)

IRPTN NETWORK	NON-RESIDENTIAL					RESIDENTIAL				TOTAL
	Business - Greenfields	Industrial - Greenfields	Mixed Use - Greenfields	Mixed Use - Redevelopment	TOTAL	Greenfields	Redevelopment	Densification	TOTAL	
	ha	ha	ha	ha		ha	ha	ha	ha	ha
Rail	67	156	72	57	352	749	818	48	1615	1967
Line 1	18	12	7	1	38	330	267	159	757	795
Line 2	0	14	0	0	14	35	11	19	64	78
Line 3	4	6	0	10	19	104	109	0	214	233
Line 4 Original	7	88	11	26	132	211	108	171	491	622
Line 4 Alternative	7	103	11	26	146	161	189	425	774	921
Links	0	0	0	0	0	1	1	105	106	106
TOTAL Original	95	275	90	94	555	1430	1313	502	3246	3801
TOTAL Alternative	95	290	90	94	570	1380	1394	755	3530	4099
%	17%	50%	16%	17%	100%	44%	40%	15%	100%	
%					15%				85%	100%

- A total 3801 Ha (original IRPTN alignment) or 4099 Ha (proposed alternative alignment) of developable land was identified within the railway precincts and along the TRT corridors of the IRPT Network.
- Of the identified developable land in close proximity to the Network, 85% was earmarked for residential development, representing 3246 Ha and 3530 Ha for the original and alternative alignments respectively.
- The remaining 15% of developable land, representing 555 Ha and 570 Ha respectively, was earmarked for non-residential development.
- Of the above, a total of 352 Ha of non-residential developable land is located within the rail station precincts.
- Of the TRT lines, Line 4 has the most non-residential development potential at 132 Ha. Note that the proposed alternative for Line 4 has a total of 146 Ha non-residential potential.
- Of the non-residential developable land along the entire Network, the greatest proportion was earmarked for industrial purposes (50%), representing 275 Ha and 290 Ha for the Original and Alternative alignments respectively.
- 17%/ 95 Ha of the identified non-residential land would be ideal for business development.

- Land earmarked for mixed use development represent 33% of the potential developable land, including greenfields (16%) and redevelopment/ brownfields (17%) sites.
- With regards to residential development potential, the railway precincts offer a total of 1 615 Ha of developable land.
- TRT Line 1 and TRT Line 4 Alternative comprise the most residential development potential of the TRT lines at 757 Ha and 774 Ha respectively.
- Note that there is a massive difference between the developable land along Line 4 Original (491 Ha) and Line 4 Alternative (774 Ha). Line 4 Alternative can thus be strongly motivated as the better of the two alignments from a land use perspective.
- Finally, of the residential development potential along the IRPT Network, roughly equal shares of land area are dedicated to infill and redevelopment, namely 44% and 40% respectively.
- The remaining 15% is earmarked for densification and will likely be slower to respond to development pressure resulting from the implementation of the IRPTN.

Potential Residential Yield Along IRPTN (Model Results)

The next section highlights the development potential in terms of residential capacity on the land identified along the various parts of the IRPT Network. An average density of 80 units per hectare was applied as base scenario (2 to 3 storey walk-ups). Furthermore, a percentage allocation was made of land earmarked for high, middle and low income residential development in every individual section along the corridors. This allocation was based on local socio-economic profile and conditions, as well as the overarching aim of promoting and enhancing mixed income development at an appropriate scale along the entire IRPT Network in the City of Tshwane.

Rail: Residential Development Capacity

Table 51 depicts the areas earmarked for residential development along the railway network of the IRPTN, as well as the residential development capacity derived from this. The total residential yield along the railway network is estimated at approximately 65 048 units. The majority of these units (48%) is earmarked for low income development and this translates into approximately 31 301 units. The middle income yield stands at 23 594 units, while it is estimated that approximately 10 154 units for the high income group can be developed around railway stations along the Tshwane IRPTN rail network.

RAIL: LAND IDENTIFIED FOR DEVELOPMENT AROUND STATIONS (500 m radius)													
Rail Sections	Developable Area	Residential Area	Residential Area				Residential Units					Density	
			High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL			
	ha	ha	%	%	%	%					%	du/ha	
1. Mabopane to Daspoort	135	77	10%	32%	58%	100%	613	1 966	3 554	6 133	<div></div>	9%	80
2. Ga Rankuwa to Rosslyn	98	44	10%	40%	50%	100%	351	1 405	1 756	3 511	<div></div>	5%	80
3. Hammanskraal to Onderstepoort	46	18	20%	50%	30%	100%	296	739	444	1 478	<div></div>	2%	80
4. Mooka to Machielsnek (vdHoff)	164	94	10%	40%	50%	100%	750	2 999	3 748	7 497	<div></div>	12%	80
5. Saulsville to Rebecca	96	42	10%	10%	80%	100%	332	332	2 657	3 321	<div></div>	5%	80
6. Pinedene to Fountains	198	100	35%	43%	23%	100%	2 781	3 388	1 795	7 964	<div></div>	12%	80
7. Panpoort to Koedoespoort (Mamelodi)	253	121	10%	11%	79%	100%	972	1 077	7 667	9 715	<div></div>	15%	80
8. Ring Rail North (Queenswood to P Capital Park West)	473	232	16%	46%	38%	100%	3 003	8 567	6 977	18 548	<div></div>	29%	80
9. Ring Rail West (Hercules to Schutte)	45	26	10%	40%	50%	100%	207	826	1 033	2 066	<div></div>	3%	80
10. Ring Rail South (Mitchell to Hartbeespruit)	106	60	18%	48%	35%	100%	850	2 295	1 671	4 815	<div></div>	7%	80
TOTAL	1 613	813	16%	36%	48%	100%	10 154	23 594	31 301	65 048		100%	80

Table 51: Rail: Land Identified for Development around Stations (500m radius)

The rail sections with the highest potential for low income development include the section from Mabopane to Daspoort (3554 units), the section along Van der Hoff Drive from Mooka to Machielsnek with a potential yield of 3748 units, the Panpoort to Koedoespoort section in Mamelodi with an estimated yield of 7667 units, and the northern section of the ring rail from Queenswood to Capital Park West which could yield approximately 6977 low income units. This is also the section of the railway network with the highest total potential (all income groups) for residential development with a total estimated yield of 18 548 units. This is due to the Capital Park site which could yield an enormous amount of residential units within the residential fabric of the Moot area.

TRT: Residential Development Capacity

The next section highlights similar scenarios for the individual TRT route sections along the IRPTN.

Line 1

The results for Line 1 (sections 1.1 to 1.5) are summarised in **Table 52**.

Table 52: Line 1: Land Identified for Development along the Route (200m on both sides)

LINE 1: LAND IDENTIFIED FOR DEVELOPMENT ALONG THE ROUTE (200 m on both sides)												
Line 1: Sections	Developable Area	Residential Area	Residential Area			TOTAL	Residential Units			TOTAL		Density
			High Income	Middle Income	Low Income		High Income	Middle Income	Low Income			
	ha	ha	%	%	%	%					%	du/ha
1.1 Kopanong -Rainbow Junction	434	363	10%	10%	80%	100%	2 902	2 902	23 216	29 020	54%	80
1.2 Rainbow Junction-Zoo	55	55	10%	33%	57%	100%	436	1 449	2 475	4 360	8%	80
1.3 Zoo-Pta Station	5	5	20%	50%	30%	100%	82	204	122	408	1%	80
1.4 Paul Kruger-Menlyn	103	103	60%	30%	10%	100%	4 934	2 467	822	8 224	15%	80
1.5 Menlyn-Mahube Valley	161	144	40%	22%	39%	100%	4 556	2 512	4 431	11 499	21%	80
TOTAL	757	669	24%	18%	58%	100%	12 910	9 534	31 067	53 511	100%	80

The total residential yield along Line 1 is estimated at approximately 53 511 units. This translates to about 31 067 low income units, 9534 units earmarked for middle income, and approximately 12 910 units for the high income group. In terms of individual sections it is evident that section 1.1 from Kopanong to Rainbow Junction provides the highest yield with approximately 29 020 units (of which the vast majority (more than 80%) is earmarked for the low income group).

Other sections with significant residential capacity include the Menlyn to Mahube Valley line (Line 1.5) with a potential yield of about 11 499 units of which almost 40% (4431 units) are earmarked for low income. This line also shows extensive potential for higher income development along Lynnwood and Simon Vermooten Drives (4556 units).

Line 2

Table 53 below represent the results of the land use scenario for Line 2. This is the TRT section from the Tshwane Inner City to Atteridgeville.

Table53: Line 2: Land Identified for Development along the Route (200m on both sides)

LINE 2: LAND IDENTIFIED FOR DEVELOPMENT ALONG THE ROUTE (200 m on both sides)														
Line 2: Sections	Developable Area	Residential Area			Residential Area	Residential Area				Residential Units				Density
		High Income	Middle Income	Low Income		High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL	
	ha	ha	ha	ha	ha	%	%	%	%					%
2.1 Paul Kruger-Maunde	27	3	11	14	27	10%	40%	50%	100%	216	864	1 080	2 160	48%
2.2 Quagga Rd-Saulsville Station	37	3	3	23	29	10%	10%	80%	100%	233	233	1 861	2 326	52%
TOTAL	64	6	14	37	56	10%	24%	66%	100%	449	1 097	2 941	4 486	100%

The results show that the area within 200m on both sides along the corridor can yield approximately 4486 residential units. The section between Paul Kruger and Maunde Drive yields about 48% of the total with 2160 units, and the section from Quagga Road to Saulsville Station an additional 2326 units which represents 52% of the total. The majority part of this residential yield is for the low income group with approximately 2941 units (66%).

It should be noted that the section from Quagga Road to Saulsville Station utilises part of the SAPS Dog Training School which is located between Atteridgeville and Kwaggasrand, and which has been identified as a Strategic Development Area for housing development in the Tshwane Municipal Housing Development Plan (2007).

Line 3

Line 3 represents the line from Rainbow Junction at Wonderboompoort to the Denneboom Station in Mamelodi. This is the north-eastern part of the Rapid Public Transit Network which functionally links Rosslyn/Akasia to the Mamelodi community. As illustrated on **Table 54** the total estimated residential yield for this line stands at approximately 12 644 units.

Table 54: Line 3: Land Identified for Development along the Route (200m on both sides)

LINE 3: LAND IDENTIFIED FOR DEVELOPMENT ALONG THE ROUTE (200 m on both sides)												
Line 3: Sections	Developable Area	Residential Area	Residential Area				Residential Units					Density
			High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL		
	ha	ha	%	%	%	%					%	du/ha
3.1 Rainbow Junction-Zambesi Mall	139	137	60%	30%	10%	100%	6 557	3 278	1 093	10 928	86%	80
3.2 Zambesi Mall-Denneboom Station	26	21	10%	10%	80%	100%	172	172	1 373	1 717	14%	80
TOTAL	165	158	53%	27%	20%	100%	6 728	3 450	2 466	12 644	100%	80

It is also clear that a large part of the residential yield is for high and middle income with 6728 and 3450 units respectively. There is, however, also significant potential for lower income development with a total estimated yield of about 2466 units.

Most of the development in the Wonderboom area will be by way of residential redevelopment within the existing urban fabric, while the eastern section of the line includes extensive greenfields development.

Line 4 Original

The next section highlights the results for **Line 4 Original** as well as **Line 4 Alternative** as discussed in the previous section of this document. **Table 55** below illustrate the results for the Line 4 Original alignment.

Table 55: Line 4 (Original): Land Identified for Development along the Route (200m on both sides)

LINE 4 (Original): LAND IDENTIFIED FOR DEVELOPMENT ALONG THE ROUTE (200 m on both sides)												
Line 4 (Original): Sections	Developable Area	Residential Area	Residential Area				Residential Units					Density
			High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL		
	ha	ha	%	%	%	%					%	du/ha
4.1 Menlyn-Solomon Mahlangu (January Masilela)	50	50	60%	30%	10%	100%	2 410	1 205	402	4 016	12%	80
4.2 January Masilela-Hennospark / K101	178	168	60%	30%	10%	100%	8 078	4 039	1 346	13 463	39%	80
4.3 Hennospark-Sunderland Ridge (K101/K69)	106	99	29%	46%	26%	100%	2 295	3 613	2 026	7 934	23%	80
4.4 Sunderland Ridge-Maunde	12	12	60%	30%	10%	100%	562	281	94	936	3%	80
4.5 Wf Nkomo St (Church St)-Brits Rd	135	102	10%	40%	50%	100%	817	3 267	4 083	8 166	24%	80
TOTAL	481	431	41%	36%	23%	100%	14 160	12 404	7 951	34 515	100%	80

Line 4 can yield an estimated 34 515 residential units stretching from the existing Menlyn Node through Centurion and up to the Kirkney, Andeon and Suiderberg area in the central-western parts of the City of Tshwane. The section with the largest individual residential yield is from January Masilela to Hennops Park (section 4.2) with an estimated yield of 13 463 units. Section 4.5 between WF Nkomo Street up to the Brits Road through the Kirkney, Andeon and Suiderberg area also yields a significant number (8166 units). Approximately 41% (14 160 units) of the residential yield along this corridor is for high income, followed by about 36% (12 404 units) for middle income, and 23% (7951 units) for low income.

Line 4 Alternative

The Line 4 Alternative can yield significantly more residential units than Line 4 Original as illustrated on **Table 56** below.

Line 4 Alternative yields about 54 383 units which is about 20 000 more than the yield of Line 4 Original. Section 4.2, 4.4 and 4.5 are the same for both alternatives, but sections 4.6 and 4.7 add additional capacity to Line 4 Alternative. Section 4.6 yields about 11 939 units (the section between Mahube Valley and Atterbury Road) while section 4.7 from Atterbury Road to January Masilela can yield about 5840 units.

Table 56: Line 4 (Alternative): Land Identified for Development along the Route (200m on both sides)

LINE 4 (Alternative): LAND IDENTIFIED FOR DEVELOPMENT ALONG THE ROUTE (200 m on both sides)											
Line 4 (Alternative): Sections	Developable Area	Residential Area	Residential Area				Residential Units				Density
			High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL	
	ha	ha	%	%	%	%					%
4.6 Mahube Valley-Atterbury	174	149	60%	30%	10%	100%	7 164	3 582	1 194	11 939	22%
4.7 Atterbury-January Masilela	73	73	60%	30%	10%	100%	3 504	1 752	584	5 840	11%
4.2 January Masilela-Hennospark / K101	178	168	60%	30%	10%	100%	8 078	4 039	1 346	13 463	25%
4.8 Hennospark-Sunderland Ridge (Ruimte Rd)	202	175	60%	30%	10%	100%	8 423	4 212	1 404	14 039	26%
4.4 Sunderland Ridge-Maunde	12	12	60%	30%	10%	100%	562	281	94	936	2%
4.5 Wf Nkomo St (Church St)-Brits Rd	135	102	10%	40%	50%	100%	817	3 267	4 083	8 166	15%
TOTAL	774	680	52%	32%	16%	100%	28 547	17 132	8 705	54 383	100%

Similarly, section 4.8 through the Hennops Park area up to Sunderland Ridge can yield about 14 039 units compared to the 7934 units which section 4.3 yields under the Line 4 Original scenario.

It is thus evident that Line 4 Alternative adds about 20 000 more residential units than Line 4 Original.

Line 5

The last section (Line 5) represents the short sections of Lynnwood Road and Atterbury Road respectively as summarised on **Table 57**.

Table57: Links: Land Identified for Development along the Route (200m on both sides)

LINKS: LAND IDENTIFIED FOR DEVELOPMENT ALONG THE ROUTE (200 m on both sides)												
Links: Sections	Developable Area	Residential Area	Residential Area				Residential Units					Density
			High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL		
	ha	ha	%	%	%	%					%	du/ha
5.1 Atterbury-January Masilela (Lynnwood Rd)	51	51	60%	30%	10%	100%	2 424	1 212	404	4 040	48%	80
5.2 Menlyn-Solomon Mahlangu (Atterbury Rd)	56	56	60%	30%	10%	100%	2 678	1 339	446	4 464	52%	80
TOTAL	106	106	60%	30%	10%	100%	5 102	2 551	850	8 504	100%	80

Both these sections could yield an estimated 4000 residential units each to bring the total yield to about 8504 units. The majority part (60%) is earmarked for high income, 30% for the middle income, and 10% for the low income residential market.

Summary: Total Development Capacity

Table below summarises the total residential yield along the entire Integrated Rapid Public Transport Network (rail and the TRT lines).

The total potential residential yield along the IRPT Network (with Line 4 Original) stands at about 178 708 residential units.

This comprises about 49 503 units (28%) for high income, 52 629 units (29%) for middle income, and 76 575 units (43%) of the total yield for low income.

Table 581: IRPTN: Developable Land (Stations and Lines)

IRPTN: DEVELOPABLE LAND (Stations and Lines)															
	Developable Area	Residential Area			Residential Area	Residential Area				Residential Units					% Alternati ve
		High Income	Middle Income	Low Income		High Income	Middle Income	Low Income	TOTAL	High Income	Middle Income	Low Income	TOTAL		
IRPTN NETWORK	ha	ha	ha	ha	ha	%	%	%	%					% Original	
Rail	1 613	127	295	391	813	16%	36%	48%	100%	10 154	23 594	31 301	65 048	36%	33%
Line 1	757	161	119	388	669	24%	18%	58%	100%	12 910	9 534	31 067	53 511	30%	27%
Line 2	64	6	14	37	56	10%	24%	66%	100%	449	1 097	2 941	4 486	3%	2%
Line 3	165	84	43	31	158	53%	27%	20%	100%	6 728	3 450	2 466	12 644	7%	6%
Line 4 Original	481	177	155	99	431	41%	36%	23%	100%	14 160	12 404	7 951	34 515	19%	
Line 4 Alternative	774	357	214	109	680	52%	32%	16%	100%	28 547	17 132	8 705	54 383		27%
Links	106	64	32	11	106	60%	30%	10%	100%	5 102	2 551	850	8 504	5%	4%
TOTAL Original	3 187	619	658	957	2 234	28%	29%	43%	100%	49 503	52 629	76 575	178 708	100%	
TOTAL Alternative	3 479	799	717	967	2 482	32%	29%	39%	100%	63 890	57 357	77 330	198 577		100%

In the Line 4 Alternative scenario the total yield increases by approximately 20 000 units to 198 577 units. Under this scenario the high income yield is a little higher at 32% with a yield of 63 890 units, while the lower income portion drops to 29% of the total, although the total low income yield increases from 76 575 to 77 330 units.

In terms of the Original scenario the railway section of the IRPT Network yields between 33% and 36% of the total residential capacity, depending on which of the Line 4 alternatives is used.

Alternative Density and Catchment Area Scenarios

The Base Case scenario is presented in **Table 59**.

Table 59: IRPTN Developable Land: Scenario 1 Base Case (500m radius and 200m on both sides)

IRPTN DEVELOPABLE LAND: SCENARIO 1 BASE CASE (500 m radius and 200 m on both sides)								
IRPTN NETWORK	Residential Area ha	Residential Units				% Original	% Alternative	Nett Density du/ha
		High Income	Middle Income	Low Income	TOTAL			
Rail	813	10 154	23 594	31 301	65 048	36%	33%	80
Line 1	669	12 910	9 534	31 067	53 511	30%	27%	80
Line 2	56	449	1 097	2 941	4 486	3%	2%	80
Line 3	158	6 728	3 450	2 466	12 644	7%	6%	80
Line 4 Original	431	14 160	12 404	7 951	34 515	19%		80
Line 4 Alternative	680	28 547	17 132	8 705	54 383		27%	80
Links	106	5 102	2 551	850	8 504	5%	4%	80
TOTAL Original	2 234	49 503	52 629	76 575	178 708	100%		80
TOTAL Alternative	2 482	63 890	57 357	77 330	198 577		100%	80

It is indicated that if the net density is increased to 160 units per hectare (3-storey walk-up housing typologies) along the IRPT Network, the residential yields could increase from approximately 178 000 units to about 357 000 units (Scenario 2).

Table 60: IRPTN Developable Land: Scenario 2 Increased Density to 3-Storey Walk-Ups (500m radius and 200m on both sides)

IRPTN DEVELOPABLE LAND: SCENARIO 2 INCREASED DENSITY TO 3 STOREY WALK - UPS (500 m radius and 200 m on both sides)								
IRPTN NETWORK	Residential Area ha	Residential Units				% Original	% Alternative	Nett Density du/ha
		High Income	Middle Income	Low Income	TOTAL			
Rail	813	20 308	47 187	62 601	130 097	36%	33%	160
Line 1	669	25 819	19 068	62 134	107 022	30%	27%	160
Line 2	56	897	2 193	5 881	8 972	3%	2%	160
Line 3	158	13 456	6 900	4 932	25 289	7%	6%	160
Line 4 Original	431	28 321	24 807	15 901	69 029	19%		160
Line 4 Alternative	680	57 094	34 263	17 410	108 767		27%	160
Links	106	10 205	5 102	1 701	17 008	5%	4%	160
TOTAL Original	2 234	99 007	105 258	153 151	357 416	100%		160
TOTAL Alternative	2 482	127 779	114 714	154 659	397 153		100%	160

If the geographic area is increased to 400m on both sides of the IRPT Network but the net density remains at 80 units/ha, noted in Scenario 3, the residential yield along the Rapid Transit Network increases from 178 708 to about 292 368 units. From this it is clear that the potential benefits (increased number of residential units) along the Rapid Transit Network is higher if the densities are increased than if the area utilised for densification is increased (compare scenario 2 to scenario 3).

Table 61: IRPTN Developable Land: Scenario 3 Doubling of Line Area (500m radius and 400m on both sides)

IRPTN DEVELOPABLE LAND: SCENARIO 3 DOUBLING OF LINE AREA (500 m radius and 400 m on both sides)								
IRPTN NETWORK	Residential Area ha	Residential Units				% Original	% Alternative	Density du/ha
		High Income	Middle Income	Low Income	TOTAL			
Rail	813	10 154	23 594	31 301	65 048	22%	20%	80
Line 1	1 338	25 819	19 068	62 134	107 022	37%	32%	80
Line 2	112	897	2 193	5 881	8 972	3%	3%	80
Line 3	316	13 456	6 900	4 932	25 289	9%	8%	80
Line 4 Original	863	28 321	24 807	15 901	69 029	24%		80
Line 4 Alternative	1 360	57 094	34 263	17 410	108 767		33%	80
Links	213	10 205	5 102	1 701	17 008	6%	5%	80
TOTAL Original	3 655	88 852	81 665	121 850	292 368	100%		80
TOTAL Alternative	4 151	117 625	91 121	123 359	332 105		100%	80

The table illustrates the combined impact of increased densities and larger catchment areas around the Rapid Transit Network (Scenario 4).

This scenario increases the total yield from the original 178 708 units to about 584 735 units or to 664 210 units for the Alternative alignment.

Table 62: IRPTN Developable Land: Scenario 4 Increased Density and Doubling of Line Area (500m radius and 400m on both sides @ 3-storey walk-up density)

IRPTN DEVELOPABLE LAND: SCENARIO 4 INCREASED DENSITY AND DOUBLING OF LINE AREA (500 m radius and 400 m on both sides @ 3 Storey Walk - Up density)								
IRPTN NETWORK	Residential Area ha	Residential Units				% Original	% Alternative	Density du/ha
		High Income	Middle Income	Low Income	TOTAL			
Rail	813	20 308	47 187	62 601	130 097	22%	20%	160
Line 1	1 338	51 638	38 137	124 268	214 043	37%	32%	160
Line 2	112	1 794	4 386	11 762	17 943	3%	3%	160
Line 3	316	26 913	13 800	9 865	50 577	9%	8%	160
Line 4 Original	863	56 642	49 615	31 803	138 059	24%		160
Line 4 Alternative	1 360	114 187	68 527	34 820	217 534		33%	160
Links	213	20 410	10 205	3 402	34 016	6%	5%	160
TOTAL Original	3 655	177 705	163 329	243 701	584 735	100%		160
TOTAL Alternative	4 151	235 251	182 241	246 718	664 210		100%	160

The above figures have to be interpreted against the backdrop of the existing housing demand and the projected future demand for housing in the City of Tshwane.

Table 63: Summary Dwelling Unit Need

SUMMARY				
DWELLING UNIT NEED				
	NUMBER OF UNITS			
	High Income	Medium Income	Low Income	Total
Household Income per Month	R12 817 +	R3184 - R12 817	R0 -R3183	
Incremental growth (2011-2037)	325 718	216 890	93 227	635 835
Backlog				
Informal (2009)			145047	145047
Backyard (2009)			83378	83378
TOTAL	325 718	216 890	321 652	864 260
%	38%	25%	37%	100%
IRPTN MODEL YIELD				
	NUMBER OF UNITS			
	High Income	Medium Income	Low Income	Total
Household Income per Month	R12 817 +	R3184 - R12 817	R0 -R3183	
SCENARIO 1: Base Case	49 503	52 629	76 575	178 708
% of Need	15%	24%	24%	21%
SCENARIO 2: 3 Storey Walk - Ups	99 007	105 258	153 151	357 416
% of Need	30%	49%	48%	41%
SCENARIO 3: Doubling of Line Area (500 m radius and 400 m on both sides)	88 852	81 665	121 850	292 368
% of Need	27%	38%	38%	34%
SCENARIO 4: 3 Storey Walk - Ups and Doubling of Line Area	177 705	163 329	243 701	584 735
% of Need	55%	75%	76%	68%
SURPLUS/DEFICIT				
	NUMBER OF UNITS			
	High Income	Medium Income	Low Income	Total
Household Income per Month	R12 817 +	R3184 - R12 817	R0 -R3183	
SCENARIO 1: Base Case	-276 214	-164 261	-245 077	-685 552
SCENARIO 2: 3 Storey Walk - Ups	-226 711	-111 632	-168 501	-506 844
SCENARIO 3: Doubling of Line Area	-236 865	-135 226	-199 802	-571 892
SCENARIO 4: 3 Storey Walk - Ups and Doubling of Line Area	-148 013	-53 561	-77 951	-279 525

This shows that the estimated potential residential increase in the City of Tshwane between 2011 and 2037 stands at about 635 835 units. If the 2009 informal settlement backlog of 145 047 units and the backyard backlog of 83 378 units are added, it brings the total dwelling unit need up to 2037 to about 864 260 units.

The IRPTN Scenario 1 yielded about 178 708 units which shows that there will then still be a deficit of about 685 552 units. It also shows the deficit in terms of high, medium and low income individually.

The deficit decreases if the densities are increased (Scenario 2) or if the catchment area around the IRPTN is increased (Scenario 3). Even when both the densities and the catchment areas are increased (Scenario 4), there is still a deficit in terms of the projected housing demand (all income groups) in the City up to 2037. This means that more areas need to be earmarked for infill development or densification, or the urban footprint of the City will have to be increased to cater for the demand.

From this it is evident that the total deficit can decrease from 685 552 units to about 279 525 units if scenario 4 which anticipates a more intense redevelopment over a larger area is implemented.

Priority Focus Areas

In conclusion **Table 64** indicate the priority areas where the largest potential benefits in terms of residential yields can be acquired along the total IRPT Network.

Table 64: Tshwane IRPTN Priority Focus Areas: Potential Number of Units

TSHWANE IRPTN PRIORITY FOCUS AREAS: POTENTIAL NUMBER OF UNITS										
PRIORITY AREA	RESIDENTIAL				NUMBER OF UNITS				%	Nett density du/ha
	Greenfields ha	Redevelopment ha	Densification ha	TOTAL ha	Greenfields du	Redevelopment du	Densification du	TOTAL du		
Priority Area 1	265	85	80	431	21 232	6 834	6 380	34 446	40%	80
Priority Area 2	56	102	-	158	4 474	8 158	-	12 632	15%	80
Priority Area 3	65	4	3	72	5 184	324	275	5 784	7%	80
Priority Area 4	68	107	-	174	5 435	8 522	-	13 957	16%	80
Priority Area 5	126	37	82	245	10 090	2 941	6 587	19 618	23%	80
TOTAL	580	335	166	1 080	46 415	26 780	13 242	86 437	100%	80
%					54%	31%	15%	100%		

In total there are five priority areas:

- The area from Kopanong to Rainbow Junction along the Rapid Transit Network which could yield approximately 34 446 units;
- Priority Area 2 is the Kirkney, Andeon and Suiderberg area which could yield about 12 632 units;
- The area between the Tshwane Inner City and Atteridgeville and specifically utilising some potential in the SAPS Dog School precinct could yield about 5784 units;
- The northern section of the ring rail line running through Capital Park can yield about 13 957 units;
- The combination of the eastern section of the Mamelodi railway line combined with Solomon Mahlangu Drive TRT could yield approximately 19 618 units.

These five focus areas can collectively yield about 86 437 residential units which is almost halve the total capacity identified along the Integrated Rapid Transit Network. This clearly indicates the strategic significance of these areas and the importance of allocating capital investment to these areas to unlock the inherent development potential.

B5 COMMUNITY INFRASTRUCTURE REVIEW

Community infrastructure in relevance to this sub-section refers to social infrastructure categorised by sector.

Points for consideration for BEPP Review 2015/2016

-Community infrastructure backlogs have been quantified and costed with focus on each type of facility;

- The demand vs supply remains unbalanced;**
- The role of local government vs that of provincial government should begin to focus and coordinating and aligning efforts to provide credible services that support well-being and liveability;**
- Areas identified in respect of provision of services include the type of service provided, the operational times and accessibility;**
- From a spatial policy directive, provision of community services should have primary focus in nodal areas agglomerating a range of services provided by the public sector (local, provincial & national) as well as those of the private sector.**
- Concerted efforts in the planning, prioritisation and implementation of community infrastructure projects should become primary focus for the period leading up to 2015/2016.**

HEALTH AND SOCIAL DEVELOPMENT

The wellbeing of a society – the state of its human development – is partially measured by the extent to which all its citizens enjoy good health, education, shelter and other life amenities that are generally regarded as social services.

In line with Tshwane Vision 2055, the three main focus areas include some concerted efforts towards zero deprivation, scaling up of early childhood development and the reduction of the burden of disease. According to the Gauteng Social Development Strategy, Social Development is about maximizing the capacity of the individual, the family or household and the community to participate productively in society, both socially and economically.

Social Development is about achieving the optimum potential of people for self-actualisation, without prejudice of any form. This can be achieved by facilitating optimisation of people's welfare, job and opportunity creation, adequate functionality in social relationships at individual, family, community level, and access to social grants. It involves the mobilization of community development and empowerment. Central to the whole notion of Social Development is the Social Infrastructure Development.

Although it is an established fact that the provision of Primary Health Services is the competency of Province, City of Tshwane has over the years delivered this service on an agency basis. This had the effect that both Gauteng Provincial Government and City of Tshwane were providing the same service to people of Tshwane to an extent that there are about 22 clinics built and managed by the City and there are those (about 88 health facilities) built and managed by the Province within the Tshwane. The latter had in turn provided subsidy to the former. The backlog to date involves about 15 Health Facilities.

The provision of Social Services is the shared function of all three tiers of Government. The City has a dedicated division providing Social Services including provision of Early Childhood Development, Care for the Aged and services to other vulnerable groups such as Youth, women and people with disability. To this extend, social infrastructure such as Early Childhood Development Centres, Multi-purpose Centres, and Transitional Centres for the homelessness. Currently the City is managing about 10 crèches with the potential for accommodating 1200 children from disadvantaged communities per year. The City has just approved a report on the initiatives to alleviate the problem of homelessness in the City. This report calls for amongst other interventions the revamping of 3 buildings within region 3 as well the construction of 1 Transitional Centre for the homelessness in each of the remaining 6 regions.

Provisional and National Commitments

1. Social development Centre in Hammanskraal 2013/14 financial year GP Social Infrastructure grant: Table 65

District Health facility Backlogs

UPGRADING AND THE EXTENSION OF THE FOLLOWING FACILITIES ARE URGENT	WARD	REGION	TOWNSHIP	BUDGET REQUIREMENTS
Extension Saulsville Clinic	62	3	Saulsville	R30,000,000
Extension Majaneng clinic to a CHC (Kekanastad) *	76	1	Kekanastad	R30,000,000
Extension Atteridgeville to a CHC and build new MOU	62	3	Atteridgeville	R30,000,000
Extension Mamelodi Clinic	28	6	Mamelodi	R30,000,000
Extension Nellmapius	40	6	Nellmapius	R30,000,000
Extension Phagameng	18	6	Mamelodi East	R30,000,000
Extension Silverton	41	6	Silverton	R30,000,000
Extension Diloppe Clinic *	8	2	Hammanskraal	R30,000,000
Replacement Pretorius park	25	6	Pretoriuspark	R30,000,000
Extension KT Matubatse with a MOU and Emergency **	37	2	Soshanguve	R30,000,000
Extend Stanza Bopape CHC with examination rooms *	15	5	Mamelodi east	R30,000,000

Replacement of Tlamelong Clinic with a CHC *	21	1	Mabopane	R30,000,000
New Sunnyside-Arcadia Clinic/CHC	58	3	Pretoria Central	R30,000,000
New Clinic PTA_North	2 *	1	Pretoria North	R30,000,000
New Olievenhoutbosch	48	4	Olievenhoutbosch	R30,000,000
New Clinic Block P	27	2	Soshanguve	R30,000,000
New Clinic in Block JJ	11	1	Soshanguve	R30,000,000
Extention of Rooihuiskraal Clinic	64	6	Rooihuiskraal	R30,000,000
Replacement of Rosslyn Clinic	4	1	Rosslyn	R30,000,000
New Clinic in Lusaka		6	Mamelodi	R30,000,000
Extension of Karenpark Clinic	4	1	Karenpark	R30,000,000
New clinic Moot		2	Moot	R30,000,000
New digital mobile x-ray unit		Region 1-7	City wide	R5,000,000
Animal impounding station in the Northern area				R50,000,000

Social Development Centres Backlog Table 66

Multipurpose Development Centres		Region 1-7		R50,000,000 per center
Centre for Homelessness		Region 1-7		R50,000,000 per center

Sport and Recreation Services Department

Provincial and National Commitments

1. Olivenhoutbosch Community library 2014/14 financial year GP SACR
2. Sokhulum Community library 2015/16 financial year GP SACR
3. Outdoor Gym 2013/14 financial year National South Africa Sport Department
4. Solomon Mahlangu Freedom square 2013/14/15 financial year National Treasury under NDPG/Tsosoloso Project

Quantifying backlogs and future demands per region, township and ward

Library facilities Table 67

		MTREF		BACKLOGS (PRESSURE POINTS ID & QUANTIFIED)		
Region	# Existing library facilities:	MTREF funded library projects:	MTREF Budget allocation:	Backlogs not funded :	Budget requirements :	Projected implementation period:
1	8			Ga-Rankuwa Library Akasia Library New Mabopane Library (03)	R 17,000,000 R 16,000,000 R 18,000,000	2014/15 – 2015/16 2015/16 – 2016/17 2015/16 – 2016/17
2	3	Suurman Library	R 10,000,000	New Eersterust Library	R 16,000,000	2015/16 – 2016/17
3	13	-	-	New Atteridgeville Library Lotus Gardens Library	R 16,000,000 R 18,000,000	2014/15 – 2015/16 2015/16 – 2016/17
4	8	-	-	Olievenhoutbosch Library (form of current MPSC masterplan)	R 16,000,000	2014/15 – 2015/16
5	5	Cullinan Library Park	R 20 000,000	Kameeldrift Library Rayton Library	R 16 000 000 R 5,000,000	2014/15 – 2015/16
6	10			Mamelodi (Lusaka) Library	R 15,000,000	2015/16 – 2016/17
7	6	-	-	Ekgangala Library	R 16,000,000	2014/15 – 2015/16
	52		R 30,000,000		R 169,000,000	

		MTREF		BACKLOGS		
Region	# Existing culture facilities:	MTREF funded culture projects:	MTREF Budget allocation:	Backlogs not funded:	Budget requirements:	Projected implementation period:
1	2	-	-	Soshanguve Culture Centre	R 30,000,000	2015/16 – 2016/17
2	2	-	-	Hammanskraal Cultural Centre	R 40,000,000	2014/15 – 2015/16

3	6	-	-	Lotus Gardens multi-purpose hall Upgrading of museums Upgrade Saulsville Arena (possible via Tsosoloso Saulsville Node)	R 17,000,000 R 10,000,000 R 5,000,000	2015/16 – 2016/17 2015/16 2014/15
4	2	-	-	Olievenhoutbosch multi-purpose hall	R 17,000,000	2015/16 – 2016/17
5	2	Cullinan Library Park (Amphitheatre)	R 1,668,000.00 (Of project budget)	-	-	-
6	0	Solomon Mahlangu Freedom Square	R 36,000,000	-	-	-
7	1	-	-	-	-	-
	15		R 36,000,000		R 119 ,000,000	

Arts & Culture facilities Table 68

Sport & Recreation facilities Table 69

	MTREF			BACKLOGS		
Region	# Existing sport facilities:	MTREF funded sport projects:	MTREF Budget allocation:	Backlogs not funded:	Budget requirements:	Projected implementation period:
1	26	Soshanguve Giant Stadium	R 290,000,000	Klipkruisfontein multi-purpose centre Ga-Rankuwa Stadium upgrade	R 30,000,000 R 40,000,000	2015/16 – 2016/17 2015/16 – 2016/17
2	12	Hammanskraal multi-purpose centre	R 20,000,000	Hammanskraal Indoor Centre New Eersterust/Stinkwater multi-purpose centre	R 30,000,000 R 20,000,000	2014/15 – 2015/16 2014/15
3	24	Lotus Gardens multi-purpose centre Upgrading of Pilditch Stadium (conditional assessment)	R 24,000,000 R 1,000,000	Upgrade Caledonian Stadium	R 30,000,000	2014/15 – 2015/16
4	2	Olievenhoutbosch multi-purpose centre	R 18,500,000 (R30 m shortfall)*	Olievenhoutbosch multi-purpose hall	R 17,000,000	2015/16 – 2016/17
5	6			Refilwe Stadium	R 40,000,000	2015/16 – 2016/17
6	26	H.M. Pitje Stadium	R 6,465,000 (compliance upgrading & assessment)	H.M Pitje Stadium	R 129 000,000	-
7	6	Zithobeni Stadium	R 250,000	Zithobeni Stadium upgrade Ekangala Stadium upgrade	R 40,000,000 R 20,000,000	2014/15 – 2015/16 2016/17
	51		R 490 815,000		R 267 ,000,000	

(The Section above will be updated against completed 14_15 projects.)

B6 TRANSPORTATION REVIEW

The public transport system in the CoT has typically been characterised by inefficient and unreliable services, lack of integration between services in terms of transfers and fares, as well as old and unreliable infrastructure and stock. The historical land development patterns are also largely inefficient and distorted and have resulted in long commuter travel distances and times as well as a need for large subsidies for public transport services in the City. Various initiatives have been recently introduced or are being currently planned and these will play an important role, together with the new CIP, in providing an efficient, integrated and sustainable public transport system, the key initiatives being:

- Prasa's modernisation programme;
- The planning and phasing of the IRPTN;
- The outcomes of the Moloto Feasibility Study; and
- The turnaround strategy for Tshwane Bus Service (TBS).

At present the dominate mode of public transport in the CoT is the mini-bus taxi. Other modes include rail, bus, metered taxis. These are discussed in more detail in the following sections.⁷

TRENDS IN DEMAND FOR TRANSPORT SERVICES⁸

Full details of household and population characteristics, trips, travel demand and transport services etc. are contained in the draft Household Travel Survey 2013. Only a few trends are included in this section.

Trip Generation

NUMBER OF TRIPS GENERATED BY HOUSEHOLDS AND PERSONS Table 70

Home Transport Analysis Zone	Number of households	Number of persons 6 years and over	Number of trips	Trips per household	Trips per person 6 years and over
Mabopane, Soshanguve	215 697	606 168	443 903	2.1	0.7
Ga-Rankuwa	98 567	256 120	209 938	2.1	0.8
Hammanskraal	56 262	158 844	111 342	2.0	0.7
Wallmannsthal AH	8 680	25 052	20 487	2.4	0.8
Pyramid	8 052	25 298	18 699	2.3	0.7
Montana	11 203	43 263	41 145	3.7	1.0
Magaliesmoot	2 561	9 257	5 077	2.0	0.5
Moot	30 463	133 880	126 855	4.2	0.9
Oos Moot, Waltloo, Silverton	9 425	39 111	32 773	3.5	0.8
Atteridgeville	55 807	133 178	100 984	1.8	0.8
Pretoria West	24 767	77 376	72 484	2.9	0.9
Tshwane CBD	2 822	6 678	6 525	2.3	1.0
Old East	14 399	44 643	33 119	2.3	0.7

⁷ Draft Tshwane CIP Status Quo Report 2014

⁸ Household Travel Survey 2013 Draft Technical Report

Home Transport Analysis Zone	Number of	Number of	Number of	Trips per	Trips per
Tshwane South-West	35 103	80 746	54 181	1.5	0.7
Tshwane South	50 810	187 285	145 987	2.9	0.8
Tshwane North-East	8 851	19 267	12 062	1.4	0.6
Cullinan, Rayton, Refilwe	11 335	36 446	34 575	3.1	0.9
Mamelodi, Eersterust, Nellmapius	166 542	420 563	291 238	1.7	0.7
New East	31 357	119 857	107 358	3.4	0.9
Tshwane South-East	7 865	24 835	19 657	2.5	0.8
Tshwane Far South-East	4 693	9 523	5 612	1.2	0.6
Tshwane Far East	11 690	31 786	16 091	1.4	0.5
Ekangala	19 754	49 360	34 212	1.7	0.7
Bronkhorstspuit	14 029	38 191	20 134	1.4	0.5
City of Tshwane	900 736	2 576 727	1 964 438	2.2	0.8

This table provides information about the household and person trip generation rates in Tshwane. It is important to keep in mind that trip information was only collected from persons 6 years and older. The Household trip generation rate ranges from a low of 1.2 in Tshwane Far South-East to a high of 4.2 in the Moot area, with a rate of 2.2 for Tshwane as a whole. Person generation rates range between 0.5 and 1.0 and averages at 0.8 in Tshwane. It is evident that the household and person rates are lower in the outlying areas, where unemployment is high and incomes and car ownership are low. Higher trip generation rates are found in the higher-income, higher car-ownership areas where there is less unemployment. Furthermore, 60 per cent of the respondents over the age of five years, reported that they had not made a trip on travel day, the main reason being that they did not need to travel.

Household income

The income of households is depicted in table below. For households in Tshwane as a whole, the mean monthly household income is R7 023. Transport analysis zones with the most affluent households include New East (R22 450) and Montana (R20 396). Transport analysis zones in which the mean household income exceeds R6 000 are Bronkhorstspuit, Ga-Rankuwa, Cullinan, Rayton, Refilwe, Tshwane CBD, Magaliesmoot, Pretoria West, Pyramid, Oos Moot, Waltloo, Silverton, Moot, Old East, Tshwane South, Tshwane South-East, Montana and New East. The area with the lowest mean monthly household income is Wallmannsthal AH (R3 209) but other areas where mean monthly incomes are below R5 000 are Tshwane Far South-East, Tshwane South-West, Mamelodi, Eersterust, Nellmapius, Hammanskraal, Ekangala, Mabopane, Soshanguve, Tshwane Far East and Tshwane North-East.

HOUSEHOLD INCOME Table 71

Transport Analysis Zone	Household Income - % of households					Mean ®
	Up to R1 000	R1 001 - R2 500	R2 501 - R4 500	R4 501 - R11 000	R11 000+	
Mabopane, Soshanguve	34.8%	15.5%	21.3%	20.7%	7.8%	4 354
Ga-Rankuwa	30.3%	10.4%	17.9%	20.6%	20.8%	7 198
Hammanskraal	33.2%	17.3%	21.6%	20.5%	7.5%	4 596
Wallmannsthal AH	41.4%	18.3%	17.8%	18.4%	4.2%	3 209
Pyramid	19.3%	13.8%	17.9%	15.1%	33.9%	11 038
Montana	2.0%	5.1%	17.0%	20.9%	54.9%	20 396
Magaliesmoot	24.1%	12.4%	24.2%	12.8%	26.6%	9 928

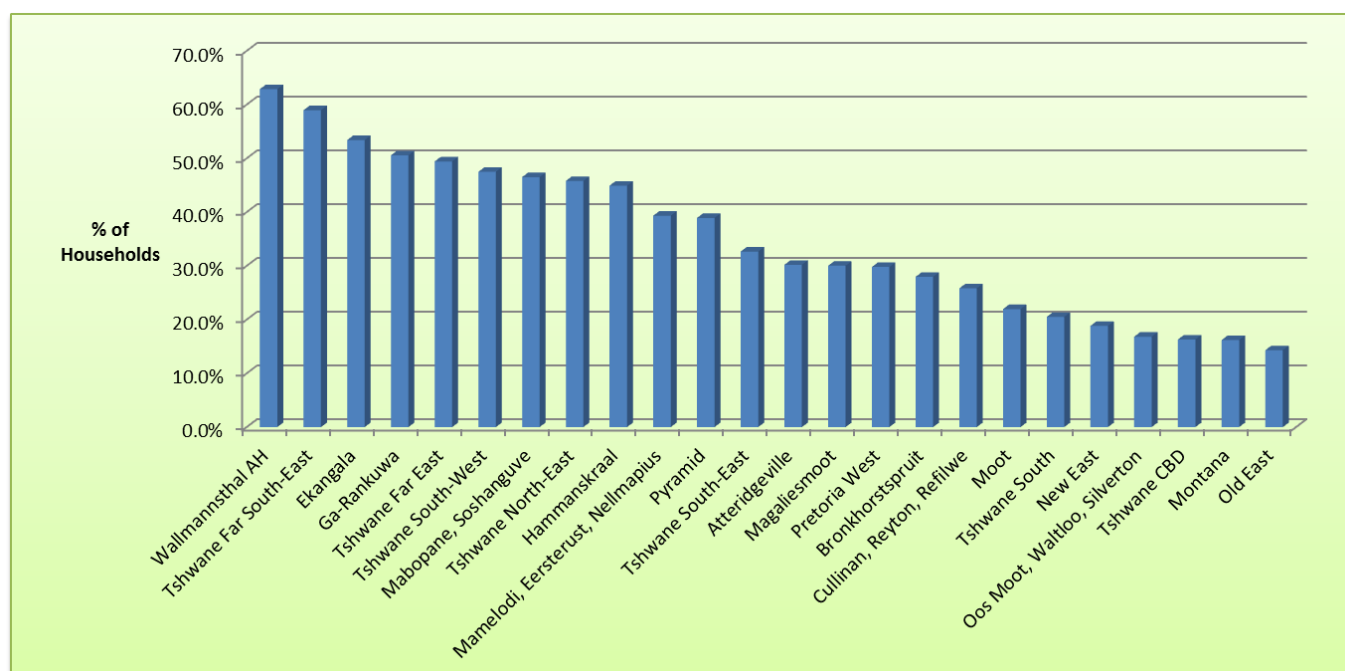
Transport Analysis Zone	Household Income - % of households					Mean ®
Moot	3.2%	9.8%	18.4%	22.3%	46.3%	13 549
Oos Moot, Waltloo, Silverton	2.9%	6.1%	16.8%	29.8%	44.4%	12 930
Atteridgeville	21.5%	13.3%	23.2%	31.6%	10.3%	5 191
Pretoria West	10.1%	5.8%	12.6%	35.0%	36.5%	10 373
Tshwane CBD	1.9%	5.8%	24.0%	43.5%	24.7%	9 711
Old East	1.7%	10.1%	23.5%	24.9%	39.8%	15 588
Tshwane South-West	36.4%	15.0%	27.4%	13.5%	7.7%	4 784
Tshwane South	6.2%	7.8%	15.4%	23.9%	46.7%	15 895
Tshwane North-East	25.2%	19.5%	34.6%	16.0%	4.7%	3 676
Cullinan, Rayton, Refilwe	13.3%	2.6%	32.7%	24.9%	26.5%	7 707
Mamelodi, Eersterust, Nellmapius	23.2%	12.8%	26.9%	29.6%	7.5%	4 769
New East	5.2%	4.8%	13.2%	17.0%	59.8%	22 450
Tshwane South-East	17.1%	11.9%	14.8%	8.8%	47.4%	19 572
Tshwane Far South-East	14.9%	28.2%	33.2%	18.9%	4.8%	4 909
Tshwane Far East	31.8%	21.2%	29.2%	13.6%	4.2%	4 121
Ekgangala	42.4%	15.3%	17.0%	13.6%	11.9%	4 505
Bronkhorstspuit	37.6%	26.0%	11.3%	13.1%	11.9%	6 138
City of Tshwane	25.4%	13.1%	21.5%	23.0%	17.0%	7 023

In the City of Tshwane as a whole, a quarter of the households reported an income of R1 000 per month or lower, and in Ekgangala, Wallmannsthal AH, Bronkhorstspuit and Tshwane South-West, the proportion is higher than 35 per cent.

Transport Problems in City of Tshwane

It is clear that the households from the analysis zones with the least transport problems [Old East (14.3%), Montana (16.2%) and Tshwane CBD (16.3%)] are also the households with the least access to public transport, although this probably has more to do with the fact that they have access to private cars. Conversely, the low-income areas such as Wallmannsthal AH are dependent on public transport and will therefore experience more transport problems.

Figure 10



PERCENTAGE OF HOUSEHOLDS IN CITY OF TSHWANE WITH TRANSPORT PROBLEMS

Table below lists the most important transport problems in each of the analysis zones, together with the proportion of households that mentioned that problem. It is important to notice that 'Taxis are too expensive' (see Error! Reference source not found. and Error! Reference source not found.) is the most important transport problem in City of Tshwane, with areas such as Wallmannsthal AH (39%), with Ekangala (25%) and Hammanskraal (24%) being affected. The second most important transport problem is the non-availability of or accessibility to buses (see Error! Reference source not found.). Affected areas are Tshwane Far South-East (32%). Tshwane South-West (23%), Tshwane Far East (20%), and Tshwane North-East (18%). 'Buses not keeping to schedules' was reported as the most important transport problem in Moot (12%) and the Cullinan, Rayton, Refilwe (12%) area.

MOST IMPORTANT TRANSPORT PROBLEMS Table 72

Transport Analysis Zone	Most important problem	% of all households
Mabopane, Soshanguve	Taxis are too expensive	22.4
Ga-Rankuwa	Taxis are too expensive	19.1
Hammanskraal	Taxis are too expensive	23.9
Wallmannsthal AH	Taxis are too expensive	39.4
Pyramid	Buses are not available/accessible	12.8
Montana	Buses are not available/accessible	4.0
Magaliesmoot	Buses are not available/accessible	7.8
Moot	Buses don't keep to schedules	11.8
Oos Moot, Waltloo, Silverton	Taxis are too expensive	6.9
Atteridgeville	Taxis are too expensive	20.1
Pretoria West	Taxis are too expensive	13.2
Tshwane CBD	Taxis are too expensive	8.1
Old East	Taxis are too expensive	6.1
Tshwane South-West	Buses are not available/accessible	22.6
Tshwane South	Buses are not available/accessible	8.8
Tshwane North-East	Buses are not available/accessible	18.1
Cullinan, Rayton, Refilwe	Buses don't keep to schedules	11.9
Mamelodi, Eersterust, Nellmapius	Taxis are too expensive	18.2
New East	Taxis are too expensive	5.9
Tshwane South-East	Buses are not available/accessible	16.5
Tshwane Far South-East	Buses are not available/accessible	32.2
Tshwane Far East	Buses are not available/accessible	20.4
Ekangala	Taxis are too expensive	25.0
Bronkhorstspuit	Buses are not available/accessible	16.0
City of Tshwane	Taxis are too expensive	17.4
	Buses are not available/accessible	6.6
	Buses don't keep to schedules	3.6

All trips

Figure and table below illustrate the purpose of trips made by people living in the City of Tshwane and in each of the transport analysis zones. As to be expected, the largest proportion of trips are made to return to home, followed by trips to work (25.8%) and trips to education (24.6%)

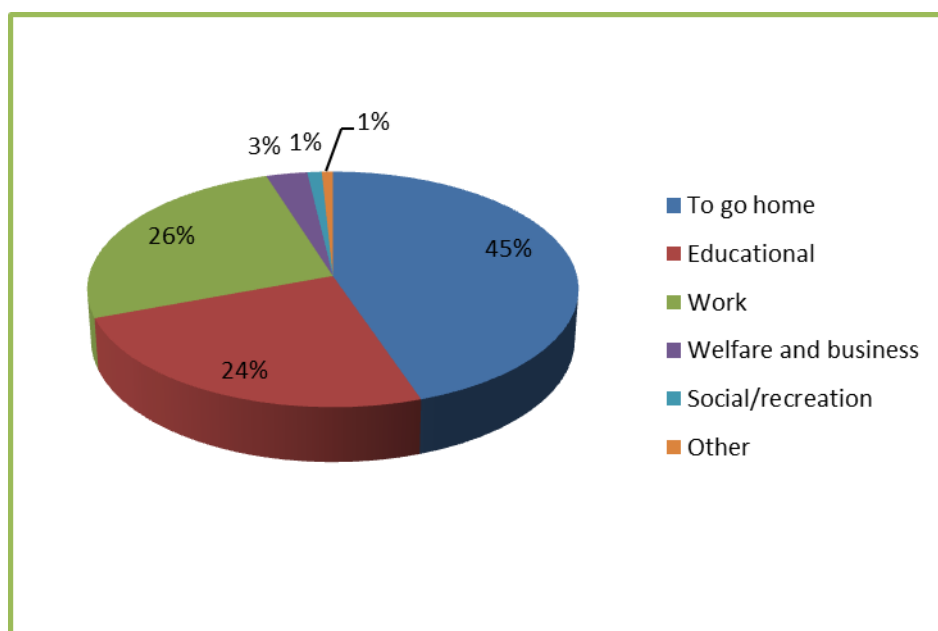


Figure 11

TRIP PURPOSE OF ALL TRIPS

It is interesting to note that in the affluent areas the trips to work outstrip trips to education (Tshwane South, Tshwane South-West, Tshwane North-East and Montana) whereas the opposite is true in the poorer areas such as Wallmannsthal AH, Tshwane Far East and Hammanskraal, to name a few.

TRIP PURPOSE Table 73

Home Transport Analysis Zone	Trip purpose - % of trips made by residents of TAZ						Number of trips
	To go home	Educational	Work	Welfare and business	Social/recreation	Other	
Mabopane, Soshanguve	45.0%	28.6%	18.9%	3.9%	2.0%	1.6%	443 903
Ga-Rankuwa	47.6%	23.2%	24.5%	2.6%	1.1%	0.9%	209 938
Hammanskraal	48.0%	28.7%	17.9%	2.1%	1.1%	2.3%	111 342
Wallmannsthal AH	48.3%	34.2%	17.0%	0.5%		0.1%	20 487
Pyramid	44.1%	18.3%	29.5%	6.2%	1.8%	0.1%	18 699
Montana	43.4%	19.4%	33.6%	3.3%		0.4%	41 145
Magaliesmoot	44.7%	17.7%	32.3%	4.6%	.8%		5 077
Moot	48.2%	17.8%	30.1%	2.7%	1.0%	0.3%	126 855
Oos Moot, Waltloo, Silverton	47.8%	17.3%	32.8%	1.4%	.1%	0.6%	32 773
Atteridgeville	47.4%	26.9%	24.9%	0.8%			100 984
Pretoria West	47.1%	23.8%	27.5%	0.5%	.4%	0.9%	72 484
Tshwane CBD	45.5%	24.6%	27.1%	2.0%	0.8%		6 525
Old East	43.5%	17.3%	29.7%	7.3%	1.9%	0.3%	33 119
Tshwane South-West	38.5%	24.0%	33.8%	2.0%	0.5%	1.2%	54 181
Tshwane South	43.7%	17.9%	33.9%	3.4%	0.9%	0.2%	145 987
Tshwane North-East	44.8%	16.2%	33.6%	2.5%	2.2%	0.7%	12 062
Cullinan, Rayton, Refilwe	48.6%	25.7%	25.5%		0.1%		34 575
Mamelodi, Eersterust, Nellmapius	41.1%	26.8%	27.5%	3.3%	0.7%	0.6%	291 238
New East	42.6%	17.3%	32.8%	6.0%	1.3%		107 358
Tshwane South-East	43.1%	23.6%	29.7%	2.5%	0.9%	0.2%	19 657
Tshwane Far South-East	47.4%	21.7%	27.4%	2.8%		0.6%	5 612
Tshwane Far East	45.4%	35.1%	17.4%	1.2%		1.0%	16 091
Ekangala	40.7%	29.2%	28.3%	1.2%	0.6%		34 212
Bronkhorstspuit	37.7%	36.1%	24.3%	1.1%		0.7%	20 134
City of Tshwane	44.8%	24.6%	25.8%	3.0%	1.1%	0.8%	1 964 438

Table below shows an origin and destination trip matrix of the analysis zones. It is important to notice the bulk of the trips originate at the following origins and end at home: Educational institution (98.7%), Work place (98.4%) and Shops/shopping centre (96.1%). Other important trips originate at home and end at work place (46.4%) and to educational institutions (46.8%).

ORIGIN BY DESTINATION Table 74

Origin	Destination - % from origin					
	Home	Work place	Educational institution	Social/ Recreational place	Shops/ shopping centre	Other
Home		46.4%	46.8%	1.7%	3.6%	1.4%
Work place	98.4%	0.6%	0.6%	0.1%	0.2%	0.1%
Educational institution	98.7%	0.7%	0.4%	0.1%	0.0%	0.1%
Social / Recreational place	88.4%	0.5%	2.7%	6.8%	1.5%	
Shops/shopping centre)	96.1%	1.0%	0.7%	1.1%	0.7%	0.4%
Other	94.6%	1.2%	0.8%	3.4%		
All	46.2%	24.9%	25.1%	1.1%	2.0%	0.8%

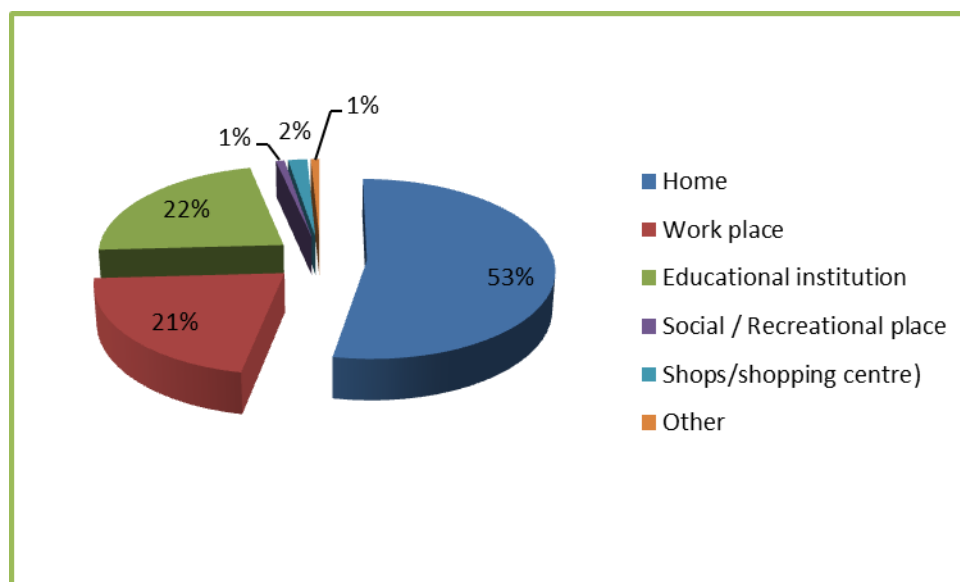


Figure 12

TRIP ORIGINS

Figure and Table below illustrate the proportion of trips in the City of Tshwane and in each TAZ that are made by public transport, private transport and non-motorised transport (NMT), respectively. Interesting to note is that overall NMT and Public transport are the same at 35 per cent.

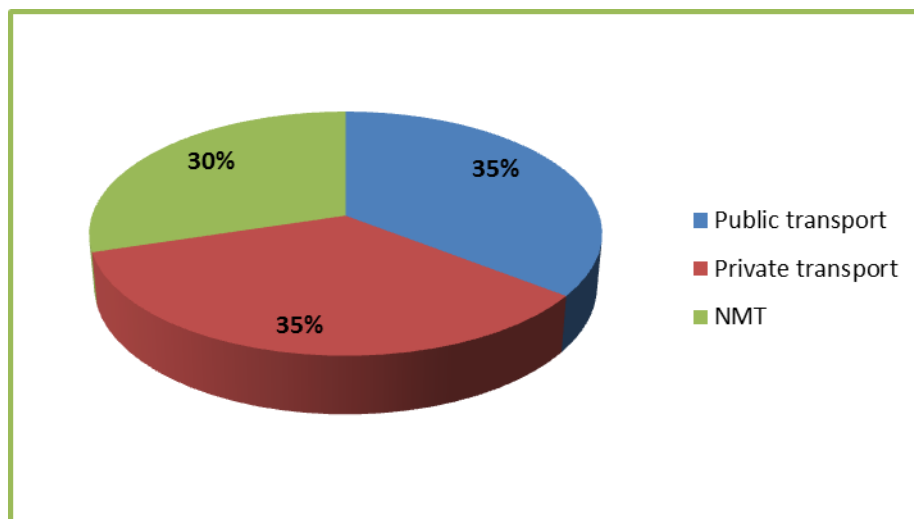


Figure 13

MAIN TYPES OF TRANSPORT IN THE CITY OF TSHWANE

Private Transport as a mode is mostly used in the high income areas Error! Reference source not found.as follows: New East (88.1%), Montana (84.1%), Tshwane South-East (83.8%) and Old East (81.4%). NMT as a mode is predominant in the low income areas such as, Wallmannsthal AH (63.3%), Bronkhorstspuit (58.1%), Cullinan, Rayton, Refilwe (49.4%), Ekangala (47.7%) and Hammanskraal (47.6%).

PUBLIC TRANSPORT, PRIVATE TRANSPORT and NMT Table 75

Home Transport Analysis Zone	Main mode - % of trips made by residents of TAZ		
	Public transport	Private transport	NMT
Mabopane, Soshanguve	46.0%	11.9%	42.2%
Ga-Rankuwa	45.0%	29.5%	25.4%
Hammanskraal	43.9%	8.4%	47.6%
Wallmannsthal AH	25.8%	10.9%	63.3%
Pyramid	12.3%	73.7%	14.0%
Montana	7.6%	84.1%	8.3%
Magaliesmoot	13.6%	68.7%	17.7%
Moot	8.7%	72.6%	18.7%
Oos Moot, Waltloo, Silverton	13.2%	69.0%	17.8%
Atteridgeville	69.4%	12.2%	18.4%
Pretoria West	36.0%	37.5%	26.5%
Tshwane CBD	21.9%	52.3%	25.8%
Old East	6.9%	81.4%	11.8%
Tshwane South-West	37.2%	26.3%	36.5%
Tshwane South	9.0%	80.2%	10.8%
Tshwane North-East	37.0%	28.3%	34.7%
Cullinan, Rayton, Refilwe	27.3%	23.2%	49.4%
Mamelodi, Eersterust, Nellmapius	50.4%	16.3%	33.3%
New East	5.9%	88.1%	6.0%
Tshwane South-East	10.9%	83.8%	5.2%
Tshwane Far South-East	43.7%	20.5%	35.7%
Tshwane Far East	35.4%	22.3%	42.3%
Ekangala	26.0%	26.3%	47.7%
Bronkhorstspuit	17.8%	24.1%	58.1%
City of Tshwane	35.5%	34.8%	29.8%

Table below provides information of the modes of transport used by the residents of Tshwane. A third of all trips (for all purposes) are made by car. Not unexpectedly, in the high-income, high car-ownership areas such as Montana, Old East, Tshwane South, East, South-East and New East, more than 75 per cent of trips are made by car. Almost 30 per cent of trips are made on foot and in Wallmannsthal more than 60 per cent of all trips are walking trips. This feature is also prominent in other outlying areas such as in the Mabopane- Soshanguve area, Hammanskraal and the Cullinan and Bronkhorstspuit areas. More than 20 per cent of trips are made by minibus-taxi – this mode is heavily used in Atteridgeville and the Mamelodi areas. The other public transport modes are used for less than ten per cent of all trips (Train 3%, Bus 5.7% and School bus 4.6%). Train, Bus and School bus feature most prominently in Atteridgeville. School bus is an important mode of transport in Tshwane North-East and in Tshwane Far South East.

MAIN MODE OF TRANSPORT PER TRIP Table 76

Home Transport Analysis Zone	Main mode - % of trips made by residents of TAZ							Number of trips
	Train	Bus	School bus	Minibus-taxi	Car	Walk	Other	
Mabopane, Soshanguve	4.4%	8.6%	3.5%	29.5%	10.5%	42.2%	1.4%	443 903
Ga-Rankuwa	4.4%	5.7%	9.2%	25.7%	28.6%	24.6%	1.8%	209 938
Hammanskraal	1.6%	10.8%	6.8%	24.7%	7.9%	47.0%	1.2%	111 342
Wallmannsthal AH		13.0%	6.1%	6.7%	10.9%	62.4%	0.9%	20 487
Pyramid	1.9%	2.8%	3.5%	4.1%	70.8%	11.9%	5.0%	18 699
Montana	0.4%	2.1%	2.4%	2.7%	82.5%	8.2%	1.7%	41 145
Magaliesmoot	0.5%	3.6%	1.7%	7.8%	66.9%	17.7%	1.8%	5 077
Moot	0.2%	4.3%	1.9%	2.3%	70.4%	17.5%	3.4%	126 855
Oos Moot, Waltloo, Silverton	0.4%	3.7%	3.6%	5.5%	65.9%	17.0%	3.9%	32 773
Atteridgeville	7.7%	9.9%	9.2%	42.5%	10.7%	18.4%	1.5%	100 984
Pretoria West	2.3%	8.7%	3.1%	21.9%	36.9%	26.4%	0.7%	72 484
Tshwane CBD	0.5%	7.0%	6.1%	8.3%	51.3%	23.7%	3.1%	6 525
Old East	0.1%	2.7%	0.6%	3.4%	80.5%	9.8%	2.8%	33 119
Tshwane South-West		2.3%	3.5%	31.4%	24.6%	36.2%	2.0%	54 181
Tshwane South	1.1%	0.8%	2.6%	4.6%	78.0%	9.7%	3.2%	145 987
Tshwane North-East	1.5%	5.8%	14.9%	14.8%	26.3%	33.6%	3.0%	12 062
Cullinan, Rayton, Refilwe		10.9%	1.5%	14.9%	22.0%	48.7%	1.9%	34 575
Mamelodi, Eersterust, Nellmapius	5.8%	3.2%	4.8%	36.5%	13.3%	33.2%	3.1%	291 238
New East	0.2%	2.1%	1.1%	2.5%	87.3%	5.9%	1.0%	107 358
Tshwane South-East	0.3%	0.3%	4.8%	5.5%	83.8%	5.1%	0.1%	19 657
Tshwane Far South-East			29.8%	13.9%	20.5%	35.7%		5 612
Tshwane Far East		3.2%	12.3%	19.9%	20.8%	42.3%	1.5%	16 091
Ekangala		4.7%	1.7%	19.6%	21.1%	47.7%	5.3%	34 212
Bronkhorstspuit		2.7%	4.0%	11.1%	21.3%	58.1%	2.8%	20 134
City of Tshwane	3.0%	5.7%	4.6%	22.1%	33.1%	29.3%	2.1%	1 964 438

The following illustrates the travel time per analysis zone. It is important to note that 30.4 per cent of all trips in Tshwane take between 16 and 30 minutes, but also that almost 60 per cent of trips take longer than 30 minutes. Mamelodi, Eersterust, Nellmapius with an average travel time of 55 minutes have the longest travel times followed Ga-Rankuwa, Tshwane South-West, Magaliesmoot (all 54 minutes).

TRAVEL TIME Table 77

Home Transport Analysis Zone	Travel time - % of trips						Mean travel time
	1 - 15 mins	16 - 30 mins	31 - 45 mins	46 - 60 mins	61 - 90 mins	91+	
Mabopane, Soshanguve	6.5%	31.1%	26.8%	17.6%	6.6%	11.4%	53
Ga-Rankuwa	8.6%	24.7%	22.9%	20.8%	11.6%	11.3%	54
Hammanskraal	6.5%	38.2%	24.0%	15.7%	6.6%	9.0%	49
Wallmannsthal AH	12.0%	24.0%	27.8%	18.5%	6.0%	11.6%	51
Pyramid	5.6%	37.2%	16.7%	19.8%	13.7%	7.0%	50
Montana	17.5%	29.5%	18.9%	19.5%	8.1%	6.6%	43
Magaliesmoot	7.3%	26.3%	18.7%	21.3%	14.1%	12.3%	54
Moot	19.8%	33.3%	16.6%	16.4%	9.5%	4.5%	40
Oos Moot, Waltloo, Silverton	12.2%	35.3%	17.3%	19.8%	11.1%	4.2%	43
Atteridgeville	5.6%	24.3%	18.9%	24.6%	19.3%	7.3%	53
Pretoria West	11.4%	27.5%	17.3%	18.7%	16.4%	8.7%	49
Tshwane CBD	15.1%	42.7%	9.9%	19.5%	7.2%	5.6%	41
Old East	21.3%	35.8%	18.1%	13.2%	8.0%	3.5%	38
Tshwane South-West	8.5%	26.6%	12.2%	27.9%	14.4%	10.5%	54
Tshwane South	10.7%	33.5%	16.5%	21.1%	12.7%	5.6%	46
Tshwane North-East	14.8%	24.6%	18.0%	22.4%	12.0%	8.1%	48
Cullinan, Rayton, Refilwe	12.3%	48.4%	13.5%	10.3%	6.8%	8.8%	42
Mamelodi, Eersterust, Nellmapius	10.0%	23.6%	14.8%	22.6%	17.5%	11.4%	55
New East	14.3%	35.2%	17.3%	18.1%	9.8%	5.3%	42
Tshwane South-East	5.3%	32.5%	20.7%	25.1%	10.8%	5.5%	47
Tshwane Far South-East	10.1%	27.8%	15.4%	26.4%	12.8%	7.4%	50
Tshwane Far East	14.5%	38.7%	10.7%	21.4%	10.4%	4.3%	42
Ekangala	5.3%	37.9%	13.8%	21.6%	11.8%	9.6%	51
Bronkhorstspuit	17.2%	45.2%	8.9%	19.1%	6.9%	2.8%	38
City of Tshwane	10.0%	30.4%	19.8%	19.6%	11.2%	9.0%	50

Travel time at City of Tshwane level graphically.

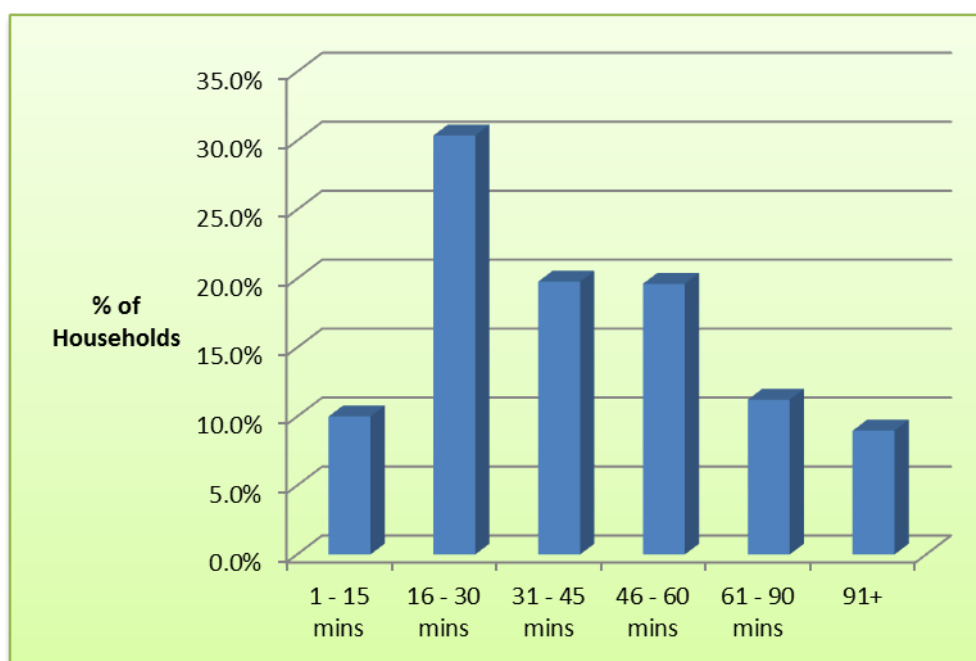


Figure 14

TRAVEL TIMES IN THE CITY OF TSHWANE

This table shows the travel times for the different main modes of transport in the City of Tshwane. Trains have the longest travel time at 86 minutes, followed by bus at 76 minutes, taxi at 61 minutes, cars at 48 minutes and walking at 34 minutes.

It is further important that the biggest group of people using the different modes have the following travel times: trains (more than 91 minutes, 35.3%), buses (more than 90 minutes, 27.1%), Taxis (between 46 and 60 minutes, 26.6%), cars (16 to 30 minutes, 29.5%), walking (16 to 30 minutes, 45.3%) and other (16 to 30 minutes, 32.7%).

TRAVEL TIME PER MODE Table 78

Main mode	Travel time - % of trips						Mean travel time
	1 - 15 mins	16 - 30 mins	31 - 45 mins	46 - 60 mins	61 - 90 mins	91+	
Train	3.3%	9.8%	5.7%	19.2%	26.7%	35.3%	86
Bus	2.7%	12.2%	10.7%	24.4%	22.8%	27.1%	76
School bus	4.7%	26.8%	24.3%	23.7%	13.9%	6.5%	51
Taxi	3.6%	20.1%	18.5%	26.6%	17.0%	14.3%	61
Car	11.4%	29.5%	19.0%	21.3%	11.4%	7.5%	48
Walk	16.3%	45.3%	24.4%	10.6%	2.5%	1.0%	34
Other	8.9%	32.7%	16.2%	25.6%	10.0%	6.7%	48

The different components of travel time per mode of transport in the city of Tshwane. Of importance to note that only 6% of public transport users have to make a transfer.

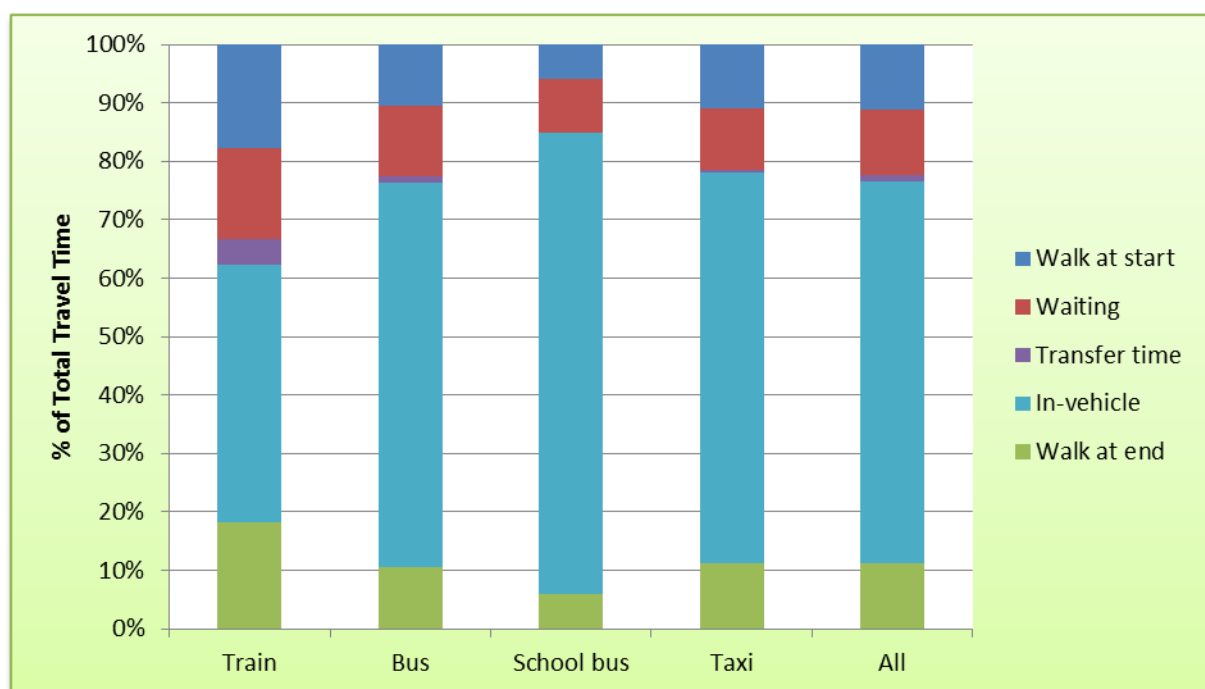


Figure 15

COMPONENTS OF TRAVEL TIME

Illustrates the number of public transport users per facility in the City of Tshwane, with the following facilities being the most heavily used: Mabopane (34 533 users), Soshanguve (28 687 users), Pretoria Station (25 615 users) and Denneboom (17 896 users).

Table below provides an overview of some Key performance indicators which should enable officials and other interested parties to gain an understanding of the performance of the transport system in the City of Tshwane in 2013.

KEY PERFORMANCE INDICATORS Table 79

KPI	Target	Status	% not within target	Number not within target
Travel time to work	Less than 61 minutes	Average 56 minutes	28% of all commuters	140 000 commuters
Travel time to work by public transport	Less than 61 minutes	Average 66 minutes	39% of all PT commuters	83 000 PT commuters
Travel time to education	Not specified (suggest less than 46 minutes)	Average 38 minutes	12% of all learners/students	102 000 learners/students

KPI	Target	Status	% not within target	Number not within target
Walking time to education	Not specified (suggest less than 31 minutes)	Average 31 minutes	32% of learners/students who walk to school	78 000 learners/students who walk to education
Work trips by public transport as a % of motorised trips	80%	47%		
Metropolitan walking time to trains	15 mins (about 1km)	Average 33 mins (where train available)	89% of households do not have access within 15 minutes*	801 000 households do not have access within 15 minutes*
Metropolitan walking time to buses	15 mins (about 1km)	Average 10 minutes (where bus available)	22% of households do not have access within 15 minutes*	210 000 households do not have access within 15 minutes*
Metropolitan walking time to taxis	15 mins (about 1km)	Average 11 minutes (where taxi available)	23% of households do not have access within 15 minutes*	801 000 households do not have access within 15 minutes*

Travel Demand Patterns

When comparing the mini bus taxi passenger demand in 2010 during the AM peak hour to the bus demand there are shorter routes crossing the main demand corridors to the CBD. More extensive demand to the South is also evident. The 2007 ITP indicated a total of 450 routes which were registered in the Operating License System. A total number of 10 750 individual vehicles were recorded. The average 12 hour vehicle utilization of only 11.5 passengers per trip indicated the high degree of over-supply in the region. The gross average number of trips per vehicle per day was 2.1 trips – which is low.

According to CoT IRPT Strategy, 30 July 2012, the demand is highest and very directional from Mabopane and Mamelodi, coinciding with their importance as Category A lines. Overall demand is low compared to the potential of rail. Since 2000 the utilisation of rail declined due to various problems such as old rolling stock and signalling system, reduced safety and security, fare evasion, urban sprawl, and competition from minibus taxi and bus services.

The demand model shows that the most significant bus volumes converge on a limited number of routes, and are directed towards the CBD. The highest utilised routes are those from Mabopane/Soshanguve, from Centurion and from Mamelodi.⁹

⁹ Draft Tshwane CIP Status Quo Report 2014

Table 80

Home Transport Analysis Zone	Main mode - % of trips to work made by residents of TAZ						Number of work trips
	Train	Bus	Taxi	Car	Walk	Other	
Mabopane, Soshanguve	13.3%	19.9%	40.0%	15.8%	7.6%	3.4%	79 538
Ga-Rankuwa	7.2%	9.6%	32.5%	40.1%	8.8%	1.9%	50 356
Hammanskraal	2.3%	28.9%	34.0%	10.6%	20.2%	3.9%	18 485
Wallmannsthal AH		35.3%	16.1%	16.4%	32.2%		3 484
Pyramid	0.2%	1.9%	5.9%	73.9%	11.6%	6.4%	5 290
Montana	0.2%	1.2%	1.6%	93.2%	2.4%	1.5%	13 522
Magaliesmoot		6.2%	10.7%	65.1%	15.1%	2.9%	1 589
Moot	0.1%	5.4%	2.2%	79.0%	9.0%	4.2%	37 533
Oos Moot, Waltloo, Silverton	0.6%	2.5%	7.7%	72.8%	12.2%	4.3%	10 710
Atteridgeville	8.8%	19.3%	48.6%	17.1%	3.2%	3.0%	25 130
Pretoria West	4.7%	8.7%	24.0%	54.3%	7.8%	0.5%	19 800
Tshwane CBD	1.0%	7.4%	11.1%	60.6%	19.1%	0.7%	1 744
Old East	0.4%	1.2%	3.5%	83.2%	10.7%	1.1%	9 596
Tshwane South-West		1.1%	49.9%	30.5%	15.0%	3.5%	17 992
Tshwane South	0.5%	0.7%	5.2%	85.6%	4.7%	3.4%	48 801
Tshwane North-East	1.8%	6.2%	18.9%	27.1%	40.8%	5.3%	4 055
Cullinan, Rayton, Refilwe		20.4%	22.5%	35.4%	17.8%	3.8%	8 813
Mamelodi, Eersterust, Nellmapius	9.4%	5.9%	56.3%	19.6%	5.7%	3.1%	78 816
New East	0.0%	0.9%	2.0%	93.6%	2.8%	0.7%	34 043
Tshwane South-East	0.6%	0.3%	7.0%	87.9%	4.0%	0.2%	5 707
Tshwane Far South-East			21.8%	30.1%	48.2%		1 516
Tshwane Far East		0.6%	28.6%	31.1%	32.4%	7.3%	2 792
Ekangala		10.2%	39.0%	33.9%	10.0%	6.9%	9 688
Bronkhorstspuit		1.7%	22.6%	41.8%	31.1%	2.7%	4 902
City of Tshwane	5.2%	9.2%	28.4%	45.5%	8.7%	2.9%	493 901

Source: Tshwane Household Travel Survey: Draft CITP 2014

PUBLIC TRANSPORT FACILITIES

The overall proposed future Public Transport Facility improvements are in support of regional spatial interventions discussed under Sub-Section C4.4:

- Proposed Tshwane TRT Trunk Routes with stops at Soshanguve, Rosslyn, Akasia, the future Rainbow Junction, CBD, Hatfield, Menlyn and Mamelodi.
- Rainbow Junction is a proposed K14 Alignment that is connected to other proposed developments at this location
- Wonderboom Airport, a strategically important airport also with proposed future developments.
- Mabopane Station and its future intermodal facility planned by PRASA including Mabopane Taxi Rank (Western side of concourse) and upgrading of existing facilities
- Winterveldt and Temba Nodes proposed developments including Transit Orientated Development
- Hammanskraal-Temba Urban Development including modal transfer facilities
- Kopanong Station proposed developments including bus and taxi ranks and pedestrian linkages etc
- Pyramid Freight Hub, a proposed TRANSNET development, in line with Gauteng Freight Strategy.

Different facilities that are either planned as new facilities or for upgrading are tabulated hereunder. The intended upgrades or development of new infrastructure should be informed by relevant spatial development frameworks addressing efficient, well-suited site specific localities in line with guiding principles of transit oriented development :

Table 81

PT FACILITY	UPGRADING / NEW FACILITY	TYPE OF FACILITY
Saulsville Stn - Bus/taxi intermodal facility	upgrading	Station Intermodal Facility
Denneboom Interchange - upgrade / PPP	upgrading: paving,shelters, toilets	Station Intermodal Facility
Pienaarspoort Station - intermodal facility	upgrading	Station Intermodal Facility
Greenview Station - intermodal facility	acquisition of land & facility	Station Intermodal Facility
Soshanguve Station - intermodal facilities	upgrading	Station Intermodal Facility
Kopanong Station intermodal facility	upgrading	Station Intermodal Facility
Akasiaboom Station - intermodal facility	upgrading: paving,shelters, toilets	Station Intermodal Facility
Hammanskraal bus & taxi facilities	upgrading	Station Intermodal Facility
Wonderboom Stn Intermodal	upgrading: total re-development	Station Intermodal Facility
Irene Station: intermodal facility	upgrading	Station Intermodal Facility
Samrand/PWV5/rail intermodal facility	upgrading	Station Intermodal Facility
Putco Terminus	upgrading	Bus Terminus
Bus Facility	upgrading: paving,shelters, toilets	Bus Terminus
Old Bus Terminus	upgrading	Bus Terminus
RDP Bus Terminus	upgrading	Bus Terminus
Soshanguve Technikon: bus & taxi bays	upgrading	Bus Terminus
Saulsville Taxi Rank c/o Mphalane & Maunde	upgrading	Minibus Taxi Rank
Bazaar St rank	upgrading: paving,shelters, toilets	Minibus Taxi Rank
Taxi Facility	upgrading	Minibus Taxi Rank
Dr Savage Rd Rank	upgrading: paving,shelters, toilets	Minibus Taxi Rank
Mahube Valley Taxi rank	upgrading	Minibus Taxi Rank
Balebogeng Bus Term. (relocation?)	upgrading: paving,shelters, toilets	Minibus Taxi Rank
Nellmapius Taxi Rank	upgrading	Minibus Taxi Rank
Taxi Rank	upgrading	Minibus Taxi Rank
Lynnwood Ridge taxi rank	upgrading	Minibus Taxi Rank

PT FACILITY	UPGRADING / NEW FACILITY	TYPE OF FACILITY
Khotso Taxi facility	upgrading	Minibus Taxi Rank
Ga-Rankuwa "no mans land" taxi rank	new: paving & shelters	Minibus Taxi Rank
Station A, Soshanguve - intermodal facility	upgrading	Minibus Taxi Rank
Rosslyn taxi rank	upgrading	Minibus Taxi Rank
Temba taxi facilities	upgrading: paving & shelters	Minibus Taxi Rank
New Eersterust	upgrading	Minibus Taxi Rank
Laudium taxi rank CBD	upgrading	Minibus Taxi Rank
Wierda Park intermodal facility	new: paving & shelters	Minibus Taxi Rank
Olievenhoutbosch PT facilities	upgrading	Minibus Taxi Rank
The Reeds: Panorama St	new: paving & shelters	Minibus Taxi Rank
Pierre v Ryneveld shops	upgrading	Minibus Taxi Rank
Bronkhorstspuit Taxi Rank -	upgrading: paving,shelters, toilets	Minibus Taxi Rank
Ekgangala Taxi Rank	upgrading: paving,shelters, toilets	Minibus Taxi Rank
Refilwe Taxi Rank	upgrading	Minibus Taxi Rank
Bus facilities east of Maunde St	upgrading: paving,shelters, toilets	Bus & Taxi Terminus
Taxi facilities east of Maunde St	upgrading	Bus & Taxi Terminus
Hartbeesspruit Stn bus & taxi facility	upgrading	Bus & Taxi Terminus
Erasmus Bus & Taxi facility	upgrading: paving,shelters, toilets	Bus & Taxi Terminus
Ga-Rankuwa Hosp. bus & taxi facility	acquisition of land (R0.7m) & facility	Bus & Taxi Terminus
Sunderland Ridge intermodal facility	upgrading	Bus & Taxi Terminus
Centurion CBD intermodal facilities	upgrading: paving,shelters, toilets	Bus & Taxi Terminus
Cowie St Holding area	upgrading: paving,shelters, toilets	Bus & /or Taxi Holding Area
Nana Sita St Holding area	upgrading	Bus & /or Taxi Holding Area
Dairy Mall Taxi Rank - holding area	upgrading: paving,shelters, toilets	Bus & /or Taxi Holding Area
Wingate Park PT holding facilities	new: paving & shelters	Bus & /or Taxi Holding Area
Menlyn PT holding areas	upgrading	Bus & /or Taxi Holding Area
Hennops Park - PT holding areas	upgrading	Bus & /or Taxi Holding Area

IRPTN Land Use Implications are addressed in Section B4.

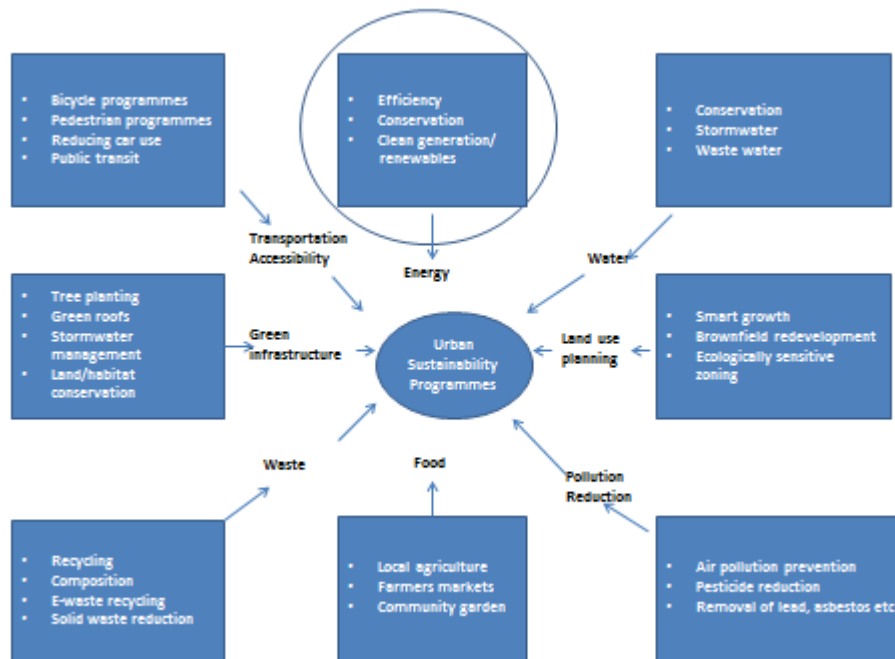
B7 SUSTAINABLE DEVELOPMENT REVIEW

The City of Tshwane has a range of ecological infrastructure, which act as strong spatial structuring elements. These include, amongst others, the Dinokeng Nature Reserve located to the north-east; the Rietvlei Dam Nature Reserve in the south-east; the Magaliesberg, Witwatersberg, and Schurveberg mountain ranges which run from west to east through the central urban parts of the metropolitan area almost creating a physical divide between the north and south, and the Bronkhorstspuit Dam to the far south-east.

For this sub-section focus will be on Tshwane's current efforts in respect of developing a sustainable city.

Figure 16 below outlines Tshwane's key focus area for 2014/2015 on Sustainable Energy where projects will be implemented through partnerships. (This Section will be updated as per completed projects of 14_15)

Figure 16



SUSTAINABLE ENERGY

Aspiration

- Increased opportunities/investment for energy efficiency and energy management
- Renewable energy option developed and promoted
- Cleaner energy is accessible and affordable to all residents

Strategic Objectives

- Enhance demand side management through loss reduction, efficiency and improved metering
- Assess & Reduce barriers that inhibit more widespread adoption of renewable energy options
- Explore the full costs and benefits of decentralised renewable energy systems against conventional grid supply
- Develop strategies to address poverty and inequality in access to renewable energy

Actions

- Improve demand side management through e.g. solar water heaters, more efficient lighting, energy efficient construction and smart power metering
- Displace some coal with renewable &/or clean energy in municipal power stations (Rooiwal, Pretoria W)
- Ambitious rollout of off-grid solutions: solar parks, bio-energy plants etc.
- Generate energy from wastes including sewage and landfills

GREEN ENERGY FOR COT FLEET

Table 82

LANDFILL GAS TO ENERGY

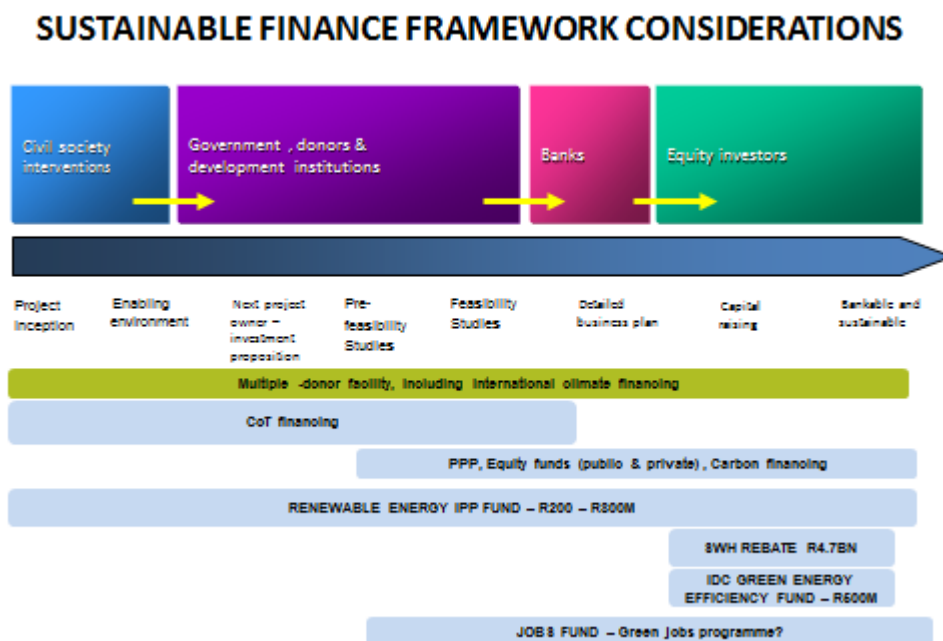
DESIGN, CONSTRUCT AND OPERATE A LANDFILL GAS TO ENERGY FACILITIES AT ALL COT LANDFILL SITES (INCLUDING CLOSED SITES)

Names	Status	Area (ha)	Remains	Type of Waste	Landfilled Volume (1,000 m ³)	Waste Flux (1,000 m ³ /month)	Potential	Remarks
Valhalla	Closed	11	-	Domestic Debris	- (1,500)	-	Ready for Generation	1 MW
Onderstepoort	Under Operation	44	7	"	2,029 (3,000)	47	"	3 MW
Heatherley	Under Operation	82	50	"	1,626 (3,000)	20	"	3 MW
Kwaggasrand	Closed	25	4	"	2,513	26	"	Slope
Ga-Rankuwa	Under Operation	32	38	"	1,379	4		
Soshanguve	Under Operation	36	9	"	395	13		Future
Temba	Closed	4	8	"	124	1		
Derdopoort	Closed	10	-	"	-	-		

SOLAR ENERGY PLANT PROJECT DESCRIPTION

- Installation and operation of a grid connected Solar Photo Voltaic system to **harvest energy from the sun**, so as to generate electricity.
 - 30 MW in Bronkhorstspuit
 - 10 MW in Rooiwaal (already contracted)
 - Requires CoT owned land
 - PPA / Wheeling agreements
 - Min 20 year off-take agreements

PARTNERSHIPS Figure 17



FINANCING & BUDGET MODEL

- Potential source of funding
 - CoT TRT Capex on committed fleet
 - City Sustainability Opex for further feasibility on TBS etc.
 - Private Equity(PPP)
 - Financial Sustainability & Benefits of the project to the City
 - Up to 50% savings on fuel costs
 - Reduction in CoTs carbon footprint

FINANCING & BUDGET MODEL

(Landfill Gas capturing system)

- Potential source of funding
 - Off CoT Balance Sheet
 - Private funding (70% equity, 30% debt)
 - Financial Sustainability & Benefits of the project to the City
 - PPA / Wheeling agreements (as per Nersa tariffs)
 - Royalty of up to 40%

FINANCING & BUDGET MODEL

(Solar Energy Plant)

Potential source of funding

- Off CoT Balance Sheet
- Private Equity

Financial Sustainability & Benefits of the project

- Reduction in CoT carbon footprint
- Increase the access and affordability to renewable energy to Tshwane residents
- Improved livelihood & Job creation

B8 IMPACT OF SECTOR REVIEWS ON SPATIAL FORM

This section will be included in the 2015/2016 BEPP Review.

C1: THE LONG TERM VISION: TSHWANE VISION 2055

ANNEXUREG:

CITY OF TSHWANES APPROACH TO PLANNING, MONITORING AND REPORTING

2014/15 IDP and SDBIP performance planning

2014/15 IDP Review

- The 2011/16 Council approved IDP for the Council term.
- The Strategic Objectives in the 5 year IDP and SDBIP are measured through indicators and targets and reported on quarterly and annually.
- The 2014/15 IDP has taken into consideration the Tshwane Vision 2055 Outcomes and strategic actions for the first decade of game changing.
- Measuring our long term Vision:
 - **Refine the long term indicators** indicated in the Tshwane Vision 2055.
 - **Develop measurable plans** to support the long term indicators to guide future planning.

Set baselines and standards for services developed in line with the Vision and outcomes

Linking the 2014/15 performance plans to BEPP

- The city has undertaken to refine its submission towards the proposed BEPP indicators.
- The City proposes an incremental approach to measuring the proposed BEPP indicators for the following reasons:

- Assess the **applicability** of the proposed BEPP indicators – identify which indicators can be measured in the 2014/15 IDP and SDBIP
- Segment the BEPP indicators into the City’s **outcomes based approach** to planning and monitoring
- In cases where BEPP indicators are not reflected to the 2014/15 plans, **set the baselines, develop plans** and place these within the Council approved plans in 2015/16 onwards

Figure 21

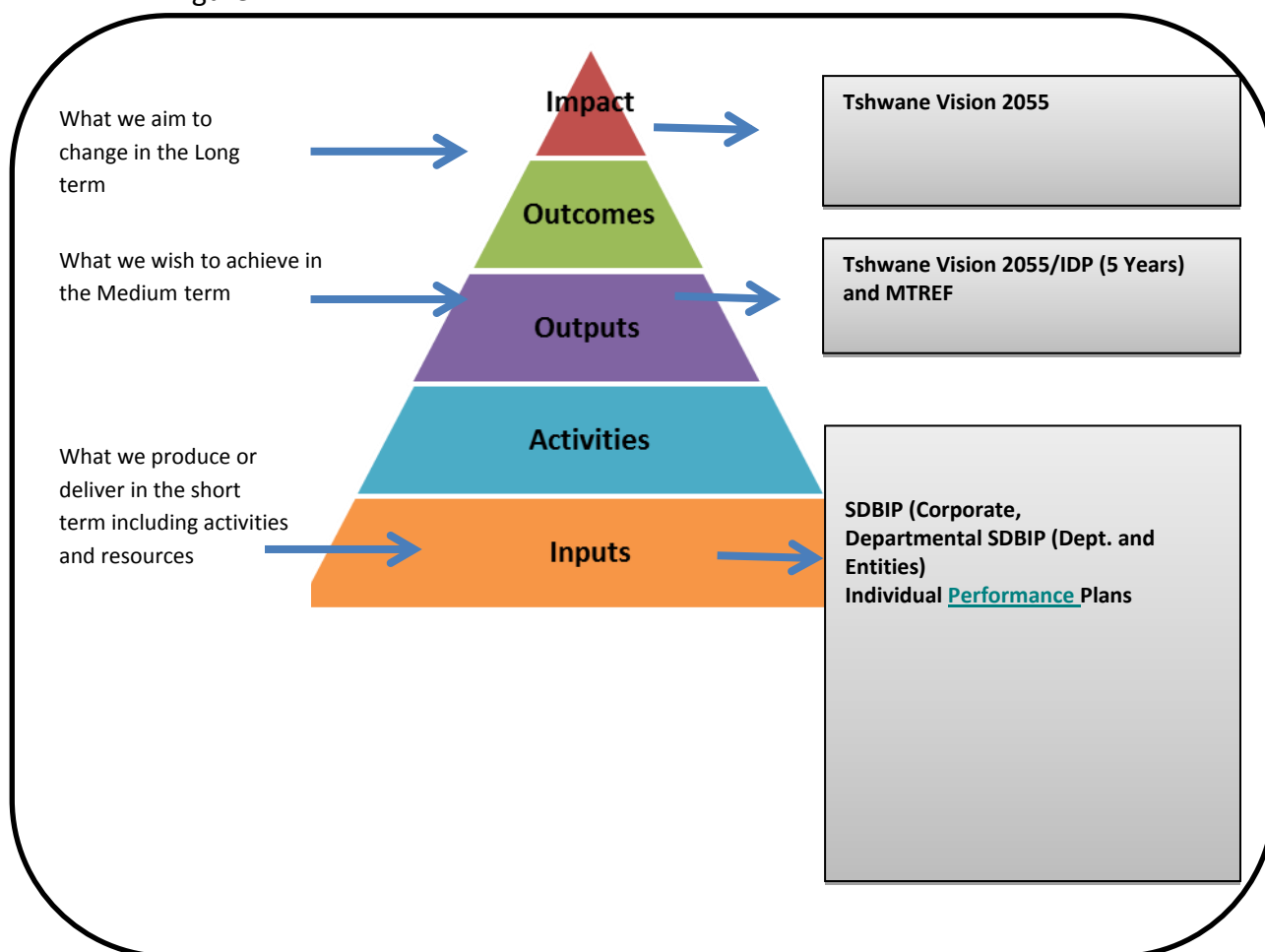


Figure 22

Way Forward – Table 83

Actions	Responsibility
Identify and segment applicable indicators and targets and approve with IDP and SDBIP	CSPM by May 2014
Develop system descriptions for IDP and SDBIP indicators (including baselines and monitoring	CSPM and Departments with support from CSP by August/Sept 2014

systems)	
Identify indicators to be monitored at a departmental level	CSPM and CSP coordinator with departments
Develop internal capacity to undertake quarterly monitoring, evidence collection and verification (short term and long term)	CSPM and CSP coordinator (Sept 2014)
Identify indicators for next financial year	CSPM, CSP coordinator and CSP – February 2015

C2 THE SPATIAL DEVELOPMENT STRATEGY OF THE MUNICIPALITY

The Tshwane **Metropolitan Spatial Development Framework (MSDF 2012)** was adopted by Council in June 2012 as per attached Council Resolution (Annexure A) and the copy of the document is annexed as (Annexure B - CD). As a municipal statutory requirement serving as one of several municipal sector plans that are a component of the IDP, the focus for the relevance of the chapter will be on the spatial directives and guidelines, intended spatial outcomes, spatial targeting for unlocking investment in strategic localities and analysis of the capital expenditure from a spatial perspective.

Spatial Directives and Guidelines

The MSDF 2012 is relevant to the formulation of the IDP as it:

- Seeks to address social need
- Is a planning for restructuring a spatially inefficient City
- Promotes sustainable use of land resources
- Provides strategic direction around infrastructure provision
- Provides guidance towards the creation of opportunities for both rural and urban areas
- Guides developers and investors towards appropriate investment localities
- Is offers guidelines for rural management to improve livelihoods and stimulate employment

The overarching principles for spatial development in Tshwane are, as per the National Development Plan:

- spatial justice (equity), through urban restructuring along nodes and corridors
- sustainability and resilience, through optimal use of resources and focused investment of infrastructure
- quality (liveability and image) , through the application of sound urban design principles and renewal and re-development of brownfield spaces

- efficiency, through compaction, densification that supports an integrated movement and connectivity network (transit-oriented development)

Tshwane's spatial vision is to become a *Spatially Efficient Capital City that is Sustainable, Competitive and Resilient*. The spatial development that speaks to the principles and intended outcomes of this vision is reliant on three primary building blocks:

- Nodes and Activity Areas
- Movement and Connectivity
- Environmental Structuring Concept

Spatial Policy and Guidelines

Tshwane's spatial policy is premised on the Smart Growth principle. To redress the city's spatial inefficiencies growth management will be applied as a spatial concept that encompasses all aspects that ensure efficient, optimal and sustainable development of the physical environment. A key principle of this concept is smart growth. The smart growth principle guides development such that resources and services are provided in such a manner that they meet the demands of the affected population over the long-term.

Nodes are those parts of the city where development should be focused. The widest variety of services and opportunities should be provided at nodal points, at degrees relative to their nodal status. Such areas are further discussed below in terms of actual location and related spatial interventions.

Compaction and Densification:

Due to the high cost of providing bulk infrastructure in low density areas, urban sprawl should be discouraged. It is imperative that available infrastructure within the nodes are used optimally. This requires densification and intensification of land uses through compaction and infill developments. Transit-oriented development will optimise the potential and infrastructure capacity of nodes while combating urban sprawl through movement between and connectivity of focus areas of development. Travel distances need to be shorter. This means ensuring that a larger proportion of workers live closer to their places of work and that public transport is safe, reliable, affordable and energy efficient.

Green economy of Spatial Planning:

The Green Economy principles seek to address environmental, economic and social problems in order to create a sustainable long term solution. In order to maintain the level of profits required by big business, new innovative solutions would need to be explored so as to ensure similar or equal product output, with minimal carbon output.

As Tshwane's economy like that of any of the other South African cities is predominantly carbon based with being the main resource for coal. With current development trends, economic growth will equate to carbon growth. In order to become sustainable, the South African economy has to decouple from coal and carbon and follow a carbon neutral economy. Key areas, which relate to sustainable development are *renewable energy, green*

buildings, clean transportation, water management, waste management and land management.

Sustainable Human Settlements

Any interventions around the housing programme of the City will need to address the multi-dimensional dynamics that influence how individuals and households choose to (or are forced to) settle. Due to our chequered settlement landscape, a number of areas need to be addressed with key focus on informal settlement upgrade in suitable localities, relocation of settlements where conditions are unfeasible and social housing.

Retail Development

The RSDFs are elaborate on retail development specifying various categories.

Rural Management

The NDP 2030 highlights the importance of rural areas, reminding us that *despite population shifts from rural to urban areas, the health and wellbeing of the entire population still depends on rural goods and services- food, water, minerals, energy, biodiversity, natural and cultural experiences, labour and land- and this will become increasingly clear in the next few decades, as resources become more constrained.*

The strategy for rural management will further guide development of Tshwane's rural areas in respect of design standards and levels of service infrastructure.

Urban Edge:

The urban edge contributes towards the achievement of the strategic objectives by conserving valuable environmental areas, which would otherwise be compromised by urban growth, and promoting the use of existing infrastructure through urban renewal, infill development and densification within the edge, thus achieving development that is sustainable. The spatial concentration of communities through densification will allow for a more efficient use of social facilities and infrastructure. The urban edge thus informs the municipal budget preparation for the allocation of projects within the theoretically drawn line of no further development with the objective of curbing sprawl.

Growth Management Boundary:

The Growth Management Boundary is the difference between the urban edge and the limit (boundary) of a future urban area. Areas identified as 'exurbia' can often be affected by this concept. A future urban area is an area that has been identified as suitable for urban development in the short to medium future. These areas are identified based on need (development pressure, logic of an area to expand and being in line with growth management principles of compaction, densification and infill). Availability of services / infrastructure, environmental sensitivities and geological constraints will inform the time at and extent to which the urban edge can be extended towards the growth management boundary.

Growth Management boundaries and future urban areas will be indicated in Regional and Local Spatial Development Frameworks.

Urban Design and Quality of the Environment

The public realm incorporates those spaces that we spend more than half our time in. The importance of the quality of the built environment may not be obvious, but is still important for the overall efficiency of both the urban and rural environment. Urban areas, though, seem to be more susceptible to negative impacts of environmental deterioration such as urban decay.

The management of the quality of the environment is important for the following reasons:

- **Environmental Impact:** the quality of the built environment will have important implications for the natural environment. Urban design largely deals with the quality of the built environment that is vital for preserving the natural environment. This would require an entire city to take on a formal policy that incentivises green buildings.
- **Competitive Edge:** the image that a city presents has ripple effects not only nationally but internationally. Physical features may influence investor confidence. There is also a strong relationship between technological changes in the economic production and structural changes in the quality and production of urban spaces. The quality of the physical environment can also be an indication of the City's commitment to urban management, which is also an indication of the city's commitment to the protection of various investments (both public and private) including service infrastructure.
- **City Image:** The "atmosphere" or the "cultural identity" of a city creates push or pull factors. Tourists now look for the "local culture" of places rather than a visit a particular art gallery, monument or place of natural beauty alone. Also a desirable location, good educational facilities, a friendly, caring community, a healthy and safe environment, good quality housing, and a competitive, stimulating local atmosphere are essential for business development. The realisation of the spatial development concepts discussed further below will be highly influenced by the city's image.

Guiding Spatial Prioritisation for Capital Investment through Spatial Development Concepts: The Rationale

Alignment with National and Provincial Priorities

Emanating from the MSDF 2012 and RSDFs 2012 are a number of spatial planning concepts to achieve spatial transformation outcomes as identified in the Spatial Vision, which include the following:



The Rationale for each is tabulated below with best localities provided in each of the 7 regions:

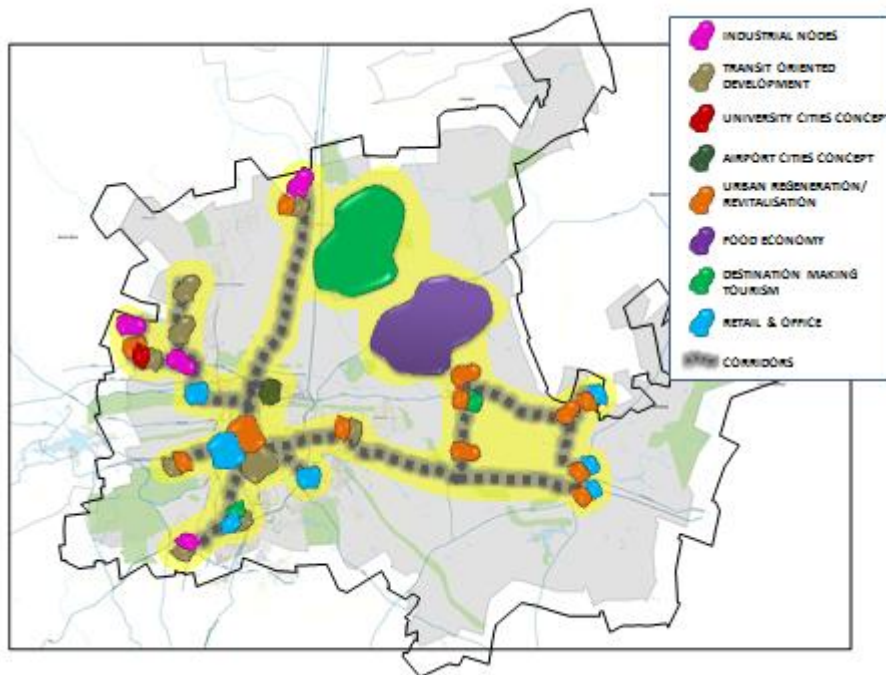
DESCRIPTION	LOCALITY	REGION
1. UNIVERSITY CITY CONCEPT		
<i>Spatial</i> response to this Growth Path : Includes Knowledge economies	University of Pretoria in Hatfield,	Region 3, Region 1
There are nodes within the metropolitan area that are characterised by largely mono-functional land uses taking up large, concentrated and defined space such as educational and research institutions.	Medical University of Southern Africa (Medunsa) in Ga-Rankuwa	
It is important to acknowledge these specialised activity areas not just in terms of their scale, but because of their sphere of influence in terms of generating movement, opportunities and linkages with other areas. These linkages do not only refer to physical linkages, but also to “connectivity” in a broader sense, such as between institutions of learning and research - Research, Innovation, Education and Technology Institutes. In th	The Tshwane University of Technology (TUT) in the CBD, University of South Africa (UNISA) Muckleneuk	
T2055 envisions Tshwane developing into a world-class knowledge based economy. Universities are an important component of the knowledge-based economy. Tshwane is home to a number of universities and other supporting tertiary and/or research institutions and can thus be defined as a university city.		
A <i>university city</i> is a city that is either dominated by its university population or accommodates a significant community, neighbourhood or district. The university may be large, or there may be several smaller institutions that are clustered together in such a way that they make up a coherent neighbourhood or precinct. The very presence of the educational institution(s) pervades economic and social life. Many local residents may be employed by or skilled as a result of the university. Many businesses within the university precinct will mostly cater primarily to the university and its students.		
Benefits of giving impetus to the University City concept are: Attracting a skilled workforce; Retaining a skilled workforce; The skilled workforce adds value to the ‘image of the local community’ further attracting investment and tourism;		

DESCRIPTION	LOCALITY	REGION
Stimulating innovation, research and development towards achieving the Smart City Concept		
Movement and Accessibility through an affordable public transport system and/or pedestrian and cyclist-friendly urban systems Functionality of precincts through significant landmarks that provide orientation cues and signage that assists in way-finding City Image through spaces that create a 'personality' for the city Recreation, arts and culture through the hosting of several cultural events, vibrant night life and a choice of activities for those with varied interests		
2. AIRPORT CITY CONCEPT		
An aerotropolis is a node whereby development is centred around an airport. It is similar in form and function to a traditional metropolis, which contains a central city core and its surrounding complementary neighbourhoods.		Region 2
Can be defined as a multi-faceted metropolitan powerhouses that attracts new businesses, create new jobs and open new commercial possibilities, introducing a vibrant business model that can accommodate intensive air travel.		
Draft Gauteng Transport Master Plan 2013: Lanseria International and Wonderboom Airports should support ORTIA with scheduled domestic flights and international flights into Sub-Saharan Africa	Wonderboom Airport	
TOD, Housing, Industrial and Retail and commercial node development to be accommodated in and around the area		
3. TRANSIT ORIENTATED DEVELOPMENT		
Target users to access the node		Region 1, 2, 3, 4 and 6
While Tshwane has a comprehensive system of higher order mobility routes and development corridors, there are still several localities that are not adequately catered for.	Pretoria Station, Centurion CBD, Hammanskraal CBD, Mabopane CBD, Soshanguve South Station/Kopanong, Atteridgeville/Saulsville, Mamelodi	
Goes beyond implementation of routes to include means of transportation that is rapid, efficient, reliable, convenient safe and attractive. Public transit has not been providing an attractive commuting alternative for those who can afford private travel options.		
Integrated Rapid Public Transport Network		
A rapid and frequent transit service		
High accessibility to the transit station		
A mix and clustering of residential, retail, commercial and community uses		
High-quality public spaces and streets which are pedestrian and cyclist friendly		
Medium to high density development within 800 metres of a transit station		
Reduced rates of private car parking		
Incorporates densification, intensification and compaction of mixed land use in close (walking distance) proximity to significant transit connections. The intention of TOD is to maximise the potential of developed land, create the population threshold required for sufficient ridership of public transport, reduce the carbon footprint by combating sprawl and promoting pedestrianism thus reducing reliance on private vehicle usage and creating vibrant 24-hour centres that provide sustainable human settlements		
<i>Transit Oriented Zones:</i> Transit Promotion Zones refer to those nodes that are centred on transportation nodes or facilities, such as stations, highway interchanges and other modal inter-changes. Transit Promotion Nodes could be part of High Density Zones or Corridors where such zones also incorporate a major transport facility.		
CONCEPTUAL FRAMEWORK For the principles to be incorporated into fundamental objectives and strategic direction, the following concepts were developed:		
<ul style="list-style-type: none"> • Smart growth • Urban design • Increased access and mobility • "green" development • Traditional Public transport and alternative/innovative public transport • Choice and convenience 		
4. URBAN REGENERATION		
Urban regeneration/renewal is "certainly a process of slum clearance" as much as it is the clearance of obsolete buildings used by slum dwellers. To create: <ul style="list-style-type: none"> • Safer City • Inclusive City • Accessible city 	The Inner City (Pretoria CBD)	Region 1

DESCRIPTION	LOCALITY	REGION
<ul style="list-style-type: none"> Attractive City Investment Friendly city 		
TARGET AREAS Identity, High profile developments, Informal Trading solutions, Range of housing opportunities, Residential Support Facilities, Tourism, entertainment and recreational opportunities, Public Transport System, Pedestrian Friendly, Public Spaces, Safety, Financing		
5. FOOD ECONOMY		
The NDP 2030 highlights the importance of rural areas, reminding us that <i>despite population shifts from rural to urban areas, the health and wellbeing of the entire population still depends on rural goods and services- food, water, minerals, energy, biodiversity, natural and cultural experiences, labour and land- and this will become increasingly clear in the next few decades, as resources become more constrained</i>	Regions 2, 5 and 7	
The GSDF identifies Agricultural Hubs within regions 2, 5 and 7, all with varying degrees of agricultural potential. These regions incorporate the largest part of the rural areas of Tshwane		
Agricultural land use encompasses purposes normally associated or reasonably required in connection with agricultural purposes and agri-villages.		
Land specifically identified as high potential farmland for productive and sustainable commercial agriculture (i.e. the cultivation of crops, rearing of livestock, extensive game farming, as well as processing of agricultural products should be protected from development and suburban encroachment. These areas are highly suitable for agricultural use and must not be seen as mere vacant land waiting for development. The availability of water is however an important factor for the viability of this activity		
Agriculture is a function of both food security and economic growth. Agriculture, if implemented sustainably, is an important tool in ensuring food security. Food security <i>exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active healthy life</i> (CoT Integrated Food Security Policy). The Policy documents the threat of increasing poverty across an ever growing Tshwane population and the challenge of ensuring food availability under these circumstances.		
Problems associated with food insecurity specific to the CoT can be attributed to the following determinants: Food availability, Food accessibility, Inadequate safety nets, Food safety and nutrition, Weak information management system		
Strategies to overcome these challenges include the following: <ul style="list-style-type: none"> Promoting food production and trade (urban and peri-urban agriculture) Promoting income generation and job creation Building adequate safety nets including basic services, food bank, etc Promoting food safety and nutrition 		
Draft Integrated Agricultural Development Support Strategy focus on the following: <ul style="list-style-type: none"> Food security and poverty eradication Empowerment of the farmer and increased incomes Promotion of agro-diversification including value addition and trade Sustainable Partnerships Sustainable agriculture 		
6. DESTINATION MAKING		
A great destination has local appeal and attract interest from outside - for business or leisure It is somewhere people want to live, work and invest	Tshwane initiatives – Inner City Regeneration Tshwane Tourism belt -	

DESCRIPTION	LOCALITY	REGION
<p>ATTRACTORS create awareness of the destination and attract market interest. Including iconic buildings, natural features, retail, leisure and cultural facilities, and events</p> <p>INFRASTRUCTURE - create a sense of place and supports smooth operation of the destination eg transport, parking, signage, public spaces</p> <p>SERVICES cater to visitors' and residents' needs, help create activity and, ultimately, increase spending. They include hotels, cafés, bars, shops, event programmes, and services such as cleaning, security and customer care</p> <p>The destination's BRAND captures all these elements of the destination experience and presents it to its markets</p> <p>Integrated MANAGEMENT of the destination is important to long term success. This include planning, development, operations, branding and marketing</p> <p>City's built form including buildings and public spaces</p> <p>Cultural heritage</p> <p>Historical buildings and places</p> <p>Symbolic locations</p> <p>Landmarks</p> <p>Natural elements</p>	<p>Circle of Pride</p> <p>Combining tourism, Public Transport and Place making initiatives</p> <p>Inner City Attractions include</p> <p>- Union Buildings, Church Square, Marabastad, Melrose House, Freedom Park</p> <p>Other include – Tswaing Crater, Rietvlei Dam Nature Reserve, Voortrekker Monument, National Botanical Gardens, Dinokeng and Cullinan</p>	
7. RETAIL AND OFFICE DEVELOPMENT		
<p>Retail Development</p> <p>A form of economic activity that should:</p> <ul style="list-style-type: none"> Depending on it's type and scale, be appropriate for its location Depending on it's type and scale, make provision for public transport (e.g. drop- off bays, parking for public transport, safe access of public transport users from transportation to shopping centre); Cater for informal trade in an integrated and formal manner Add value to the aesthetic quality of the built environment Be sensitive to the natural environment 	<p>Menlyn: Menlyn Maine</p> <p>Proposal</p> <p>Centurion</p> <p>Akasia</p> <p>CBD</p>	
8. INDUSTRIAL NODES		
<p>There are nodes within the metropolitan area that are characterised by largely mono-functional land uses taking up large, concentrated and defined space. It is important to acknowledge these specialised activity areas not just in terms of their scale, but because of their sphere of influence in terms of generating movement, opportunities and linkages with other areas. These linkages do not only refer to physical linkages, but also to "connectivity" in a broader sense, such as between institutions of learning and research.</p> <p>Specialised Activity Areas include such areas as: Industrial Estates</p>	<p>Babelegi</p> <p>Ga-Rankuwa</p> <p>Watloo</p> <p>Ekandustria</p> <p>Sunderland Ridge</p>	
<p>Tshwane Vision 2055:</p> <p>Produce a meaningful and sustainable change toward poverty eradication.</p> <p>The history of efforts to eradicate poverty emphatically demonstrates that we cannot effectively do so without transforming the existing patterns of accumulation and distribution of wealth. Hence any sensible attempt to eradicate poverty should aim at altering the ideological, material and institutional basis of the current social systems, including the patterns of production, distribution and consumption.</p> <p>Although the Census 2011 suggests that the city has one the lowest rates of unemployment levels in the country; the city continues to seek ways of defeating this scourge</p> <p>It's only through increased investment that the city will be able to produce more enduring decent employment opportunities.</p> <p>An enabling climate for investment is critical for economic growth and social development within the City</p>		

Ultimately, the spatial development concepts highlighted above are focussed on strategic areas with a focus on driving economic development with transport/movement system being the backbone for connecting the sparse Tshwane boundaries



Spatial Targetting: Tshwane Spatial Development Investment Areas

Intended Outcomes of the Spatial Strategy: of applying these principles within the spatial context are:

- *Improved service delivery through impactful infrastructure investment in strategically located areas of the city;*
- *Reduced carbon footprint through nodal development;*
- *Increased investment in the city through improved global liveability rating;*
- *Reduced pressure on agricultural and conservation land through optimal use of land*
- *Reduced cost of living through as a result of transit-oriented development thus reducing travel time, cost and distance;*
- *Increased options in housing typology (structure and cost), addressing various income groups and integrating various communities;*
- *Improved quality of life for Tshwane residents through convenience of increased access to goods and services within nodal areas supported by an efficient and integrated public transport system; and*
- *Reduced cost of delivery services by facilitating the sharing of resources (public facilities, services, equipment) through nodal development*

2. STRATEGIC INFRASTRUCTURE PROJECTS (SIP)

Strategic Infrastructure Projects (SIP) 2 and 7 is to be implemented in the City of Tshwane.

The SIPs cover social and economic infrastructure and include catalytic projects that can fast-track development and growth.

SIP 2: Durban-Free State-Gauteng logistics and industrial corridor

The aim of the projects which form part of SIP 2, is to strengthen the logistics and transport corridor between South Africa's main industrial hubs.

Freight in the City of Tshwane has been discussed under Sub-Section B2 above.

SIP 7: Integrated urban space and public transport programme

This project aims to coordinate planning and implementation of public transport, human settlement, economic and social infrastructure and location decisions into sustainable urban settlements connected by densified transport corridors.

Allocations are made for the implementation of the TRT route in the City of Tshwane 2014/2015 Capital Budget. This is a continuation from the previous financial year. TRT Projects 2014/2015 – Table 84

TRT PROJECTS 2014/2015
Construction of various Roads and Stormwater Systems in Tshwane , As and When required for a 3 year term - The Construction of a TRT Roadway on Nana Sita
Construction of TRT Infrastructure on Line 2A: CBD to Hatfield, Section 2A-2 (Kotze Street, Jorrisen Street and Lynnwood Road)
Construction of TRT Infrastructure on Line 1A: CBD to Rainbow Junction Section 1A-1 (Paul Kruger Street from Pretorius to Venter Street)
Construction of TRT Infrastructure on Line 1A: CBD to Rainbow Junction Section 1A-2 (Venter Street to Louis Trichardt)
Construction of TRT Infrastructure on Line 1A: CBD to Rainbow Junction Section 1A-3 (Louis Trichardt Street to Rainbow Junction)
Construction of TRT Infrastructure on Line 1A: CBD to Rainbow Junction Section 1A-4 (Rainbow Junction to Rachel de Beer)
Construction of TRT Infrastructure on Line 1A: CBD to Rainbow Junction Section 1A-5 (Nana Sita to Scheiding Street)
Construction of TRT Infrastructure on Line 1A: Section 1A-6 Mansfield Railway Bridge
Construction of TRT Infrastructure on Line 1B: Wonderboom Station to Akasia
Construction of TRT Infrastructure on Line 1B: Britts Rd./Doreen Aven. To Kopanong Station
Construction of TRT Infrastructure on Line 2B: Hatfield to Menlyn (Lynnwood Road and Atterbury Road)
Construction of TRT Infrastructure on Line 2C: Menlyn to Denneboom Station

TRT PROJECTS 2014/2015
Construction of TRT Infrastructure: NMT Facilities
Construction of TRT Infrastructure: Stations
Construction of TRT Infrastructure on Line 2B: Menlyn Terminal
Construction of TRT Infrastructure: Rainbow Junction Intermodal Facility
Construction of TRT Infrastructure: Pretoria Station Intermodal Facility
Construction of TRT Infrastructure: Rainbow Junction Depot
Construction of TRT Infrastructure: Garstfontein (Pretorius Park) Depot
Construction of TRT Infrastructure: Belle Ombre Layover Facility
Construction of TRT Infrastructure: Kopanong Layover Facility
Construction of TRT Infrastructure: Akasia Layover Facility
Construction of TRT Infrastructure: Denneboom Layover Facility

Densification with the correct yields and housing typologies around the TRT route must be spatially ensured. This is an immediate short-term objective. TRT Trunk Routes will have stops at Soshanguve, Rosslyn, Akasia, Rainbow Junction, CBD, Hatfield, Menlyn and Mamelodi.

C3 OVERVIEW OF AREA-BASED INITIATIVES INCLUDING CATALYTIC PROJECTS

Area-based initiatives have been identified in all the 7 regions with the objective of effecting the spatial development concepts emanating from the macro spatial planning policy and guidelines. All of these contain some or more of the following:

- Connectivity and accessibility- through transit oriented development, non-motorised movement and upgrade of corridors, activity spines etc
- Destination making – Tourism Promotion by investing in arts and culture and priding ourselves in our heritage
- Attractive Environment – Creating a World Class City by upgrading our public environment
- Eco-Efficiency – Green resources
- Compact City – Densification within the 25 km radius from CBD. Nodal and corridor development giving realization to spatial transformation within the Urban Networks Strategy area currently identified for Tshwane and all other nodes and corridors identified in the Regional Spatial Development Frameworks 2014.

C.4.4: IDENTIFIED CATALYTIC URBAN DEVELOPMENT PROJECTS OF A CITY WIDE CONTEXT AND THEIR IMPEDIMENTS

a) Background

As part of remaking the spatial form of the capital city, the City of Tshwane is guided by the principles of justice, sustainability, resilience, spatial quality and spatial efficiency. In this regard, the City of Tshwane has embarked upon an urban regeneration programme that will result in visible changes to the development and management of the capital city. The changes are aimed at creating a mixed and intensified land uses particularly around the inner city as well as other nodes within the City.

Through this, the city hopes to catalyze private sector investment in and around priority areas and nodes.

b) Catalytic Projects

West Capital Development (CBD)

This is a R6 billion plan of the City of Tshwane to redevelop the western part of the city over the next five to eight years. The project stretches from west of Church Square in the CBD toward the west linking with Atteridgeville. The current phase focuses around the four parcels of land, estimated to be 28 hectares in total and located to the west of the CBD, and will contribute towards catalyzing activity to sustain viable communities.

It is an innovative service delivery mechanism and a substantive economic growth propeller, which will lay the foundation for repositioning and regenerating the identified area west of the city.

The West Capital Development Project, as a mixed-use development, consists of residential accommodation for different income groups, retail and commercial office components. It will address inner city housing to counter long travelling time and to take advantage of new public transport systems in the inner city.

Centurion Node Development

The Centurion Node Development comprises of the following two catalytic projects:

- **African Gateway**

It is a significant landmark of mixed-use development in the heart of Centurion. The project is strategically located on an 80-hectare site close to airports, local rail stations, bus stations and the Centurion Gautrain station and will be integrated with the planned Government and Tshwane International Convention Centre (TICC) precincts. Two International Institutions (AU and UN) are expected to take up occupation in Tshwane and the total estimated value of the project is R6, 5 billion. The steps to unlock this development are underway and agreements are being finalized with DIRCO to ensure that there is compliance with all the necessary requirements.

The development on the African Gateway will include:

Government Precinct: This 240 000 m² project entails the creation of a high density government precinct that will include, amongst other developments, 500 hotel rooms, 150 000 m² of offices, 35 000 m² of commercial space and high end residential apartments for African Union and United Nations personnel.

Tshwane Convention Centre: The convention Centre project aims to position the City of Tshwane as Africa's leading business tourism destination of choice. This Tshwane International Convention Centre is strategically located at the centre of the Gauteng, Mpumalanga, and Limpopo and North West axis in Centurion. On completion, the centre will comprise of a plenary hall, auditorium, breakaway rooms, exhibition facilities, an arena for special events, parking facilities, banking facilities, travel clinic and culinary and associated facilities.

- Symbio City

The Symbio City concept entails the conversion of ten hectares of land, which surrounds and includes the manmade Centurion Lake, into the vibrant mixed-use Symbio City that will link the Centurion Gautrain station with the existing Centurion Mall. The City is currently finalizing the land alienation process in terms of the required legislation before the development could take place. This development will largely be driven by private investors. The development will comprise of the following mixed uses:

Retail Development: A Shopping Centre with at least 100,000 m² of GLA, with a maximum height of 5 story's.

Office and Hotel Development: An office component with at least 350,000 m² of GLA and a 295 bed Hotel with a maximum height of 110 story's.

Residential Development: Maximum of 1000 units

These interventions are aimed at strengthening investor confidence and create a vibrant, efficient and liveable city.

c) Impediments of projects implementation and spatial transformation

The identified catalytic projects have faced a number of teething challenges due to the sheer size and the complexities the project of this magnitude demands. Some of the challenges faced included:

- Institutional arrangements and the management of the projects;
- Lack of financial support particularly to provide the required project development
- Lack of available infrastructure to support development;
- Delays in implementation due to poor project conceptualization and design
- Long and complex procurement process
- Lack of understanding of the property or real estate sector.

As a result of all these challenges, the projects have not find the traction required to start showing of meaningful contribution to spatial transformation as an intended goal.

C.4.4: PREPARATION OF CATALYTIC URBAN DEVELOPMENT OF A CITY WIDE CONTEXT

- a) The city developed an unambiguous Long Term Vision and Spatial Plans in 2013 which informed the spatial transformation agenda of the City. These projects were identified taking into account the principles as outlined in our Spatial vision and the criteria adopted in the preparation and adoption of the projects were as follows:

Location: The projects are located in the CBD and the Metropolitan Node and as a result will have a significant impact in driving the spatial integration.

Ability to integrate structuring elements: these include housing, transport and jobs.

Ability to attract investments: due to their strategic location it is the view of the city that if properly packaged it will attract investments both from private and public sector. This will result in greater alignment of public and private investments.

Inclusivity and mixed use development: the rationale behind the mixed use kind of investment is that it support the principle of livability by accommodating different income groups within the same space and encourage high density and compaction which are able to support public transport systems and efficient use of available infrastructure

b) Project Budgeting

The City's view on these projects is that due to the budgetary constraints, the projects will not be financed through the city's balance sheet. To address the budgetary issue, the projects are to be implemented by the private sector however, the required bulk infrastructure in support of the projects are to be provided by the City. The breakdown of the projects costs are as follows:

Project	Estimated cost	Source of funding
1. African Gateway (Centurion Node) - Government Precinct - Tshwane Convention Centre	R4.5 Billion R2 Billion	Private investment
2. Symbio City	R20 Billion	Private investment
3. West Capital Development (CBD)	R6 Billion	Private Investment

The above costs are for constructions and don't include the cost of the required infrastructure upgrade in support of the development. The city is open to explore other funding mechanisms to drive the development.

C.4.5 Development Strategies of a City Wide Context

The rational and objectives of the projects are informed by our Long Term Vision and the Spatial Development Plans. These plans advocate for the following:

- Drive spatial transformation through densification and compact development;

- Address many of the ills currently caused by urban sprawl;
- Achieve a balanced sustainable growth to optimize the potential and infrastructure capacity;
- Revitalize and develop new economic nodes that support transit-oriented development and public transport systems;
- Strategically invest in infrastructure targeting various nodes, corridors, activity spines, and strategic land parcels that support higher intensity of mixed use development;
- Achieve a balanced sustainable urban growth by implementing a certain density typology based on the characteristics of the locality;
- Conserve and protect natural resources through the intentional ordering of urban development within the boundaries of specific delineations; and
- Give equal access to the City's social and economic infrastructure.

C.4.6 Institutional Arrangement Required of a Tshwane wide Context

The projects are to be implemented in different models, some will be through a competitive bidding process and others will be through partnerships. The institutional arrangement will be in a form of government partnering with private sector in the delivery of the final product. The city will manage the entire project through an establishment of an institutional mechanism details of which are being finalized. The partnerships are through the signing of land development agreement and long term lease.

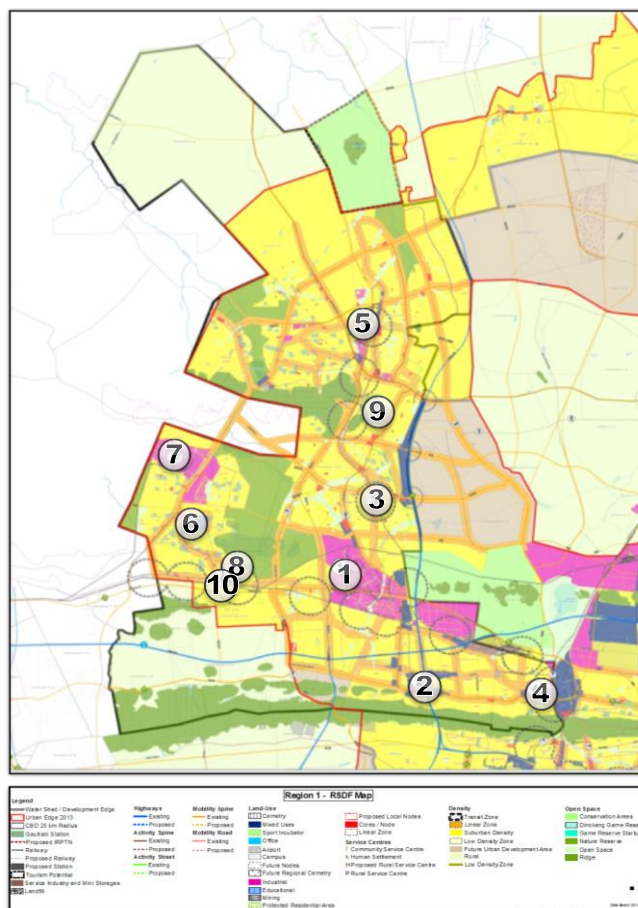
C.4.7 Timeframes

All the projects identified have a ten year delivery horizon and will be implemented in phases.

C4: PREPARATION OF INTEGRATION ZONES AND URBAN HUBS PRECINCT PLANNING AND CATALYTIC PROJECTS – BASED ON COUNCIL APPROVED REGIONAL SPATIAL INTERVENTIONS, MARCH 2014

Within the near future these will be packaged into Spatial Development Concepts to drive investment in specific focus areas. Regional spatial interventions have been identified and translated into projects. The main activity areas in each region are highlighted on the maps below followed by a table indicating interventions/projects and intended outcomes. Some of the nodes have been addressed in graphic details and capital programme quantification under Sub-section C4 (Urban Networks –Identification of Urban Hubs and Integration Zones).

Main Activity Areas that serve the greater communities

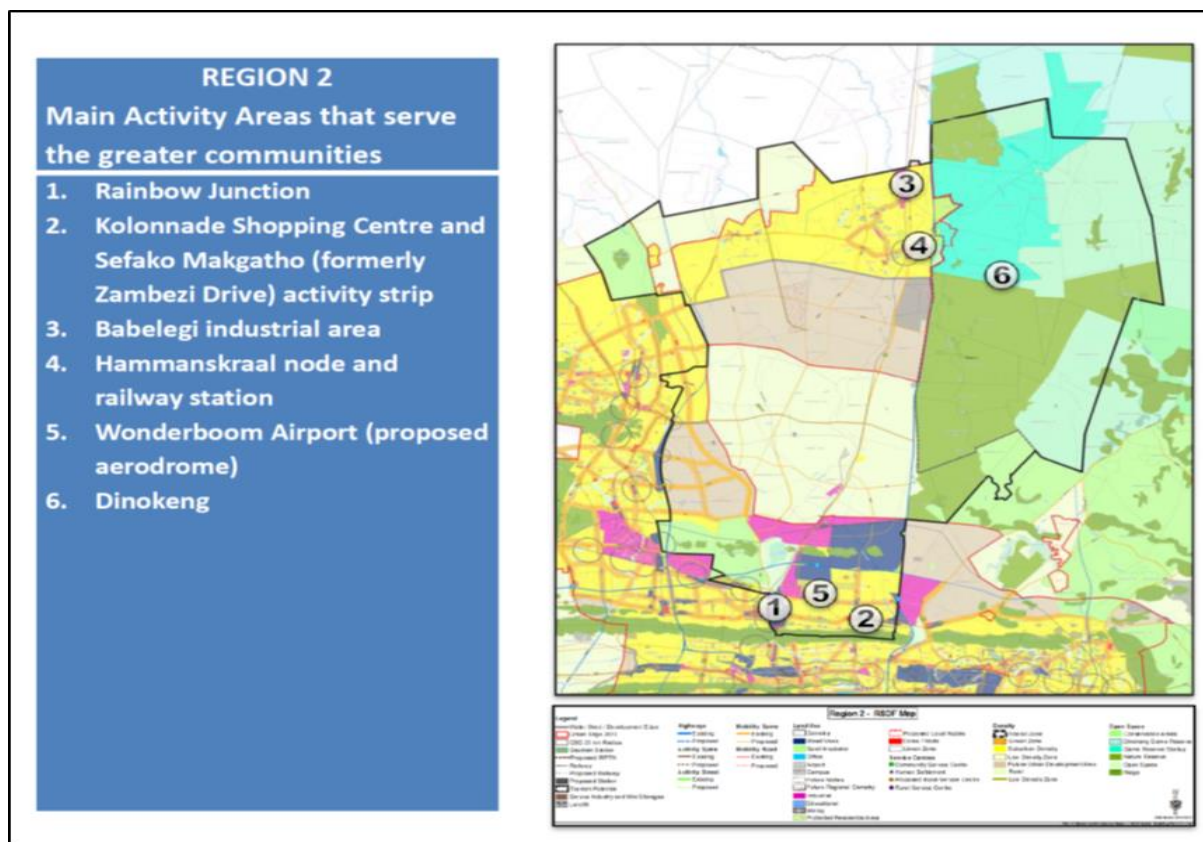


REGION & PROJECT	DETAIL	RATIONALE
Region 1		
Akasia Node	<p>Public transport facility (Taxi and Bus ranks) -Informal economy -Boulevard -TRT Route - Future phase along Heinrich avenue Transit Orientated development will ensure that supporting developments (high density residential) in the node is promoted in order to support TRT and other modes of transport.</p> <p>Social Housing Acquire vacant land in the Akasia CBD High Density Development (80-150 dwelling units per hectare)</p> <p>Recreational Theme Park with events centre Upgrade the Amphi-theatre to a Recreational Theme Park with (Arts and Culture, Flea-Market etc) Upgrade existing city hall to Convention Centre for small-medium functions</p> <p>Regional Headquarters Municipal and other government services</p> <p>Pedestrian air bridge Linking the headquarters with the TOD</p>	<p>Improve accessibility and connectivity</p> <p>Create sustainable communities closer to work opportunities</p> <p>Create liveable communities</p> <p>Good governance</p>
Ga –Rankuwa Node	<p>Mixed Use Development Student Accommodation Recreational Activity Retail Character</p> <p>NMT along Pilane Road supported by landscaping Pedestrian and cycle route</p> <p>Upgrade Pilane and Molotlegi Streets Intersection Installation of traffic light</p> <p>NMT along M17 supported by landscaping Install signage, Pedestrian and cycle route Public transport facility Urban Agriculture Wetland Rehabilitation (Bird life)</p> <p>Electricity sub-station upgrade Support future mixed use development for the entire township development strategy</p> <p>Integration Zone-Molefe Makinta Road Urban agriculture -Rehabilitation of the wetland</p> <p>Extension of K212 to N4 Road Upgrade to link with N4 and further link with Molefe Makinta Road</p> <p>Engineering infrastructure Bulk water installation -Bulk electricity</p> <p>Public environment upgrade Pedestrian walkways -Public transport facility</p>	<p>-Support the Knowledge Cities Concept: Education Hub & Medical Institution as well as TO.D. -Attractive public environment to improve liveability</p> <p>Entrance to Ga-Rankuwa should promote ease of movement</p> <p>Sustainable, liveable cities promoting ease of movement and open space conservation</p> <p>Infrastructure investment catalyses capital investment.</p> <p>Activity spine development linking the Gateway Node and CBD</p> <p>Improve accessibility, connectivity Unlock development potential</p> <p>Essential for industrial development Support economic growth</p> <p>Create quality public environment to attract investment and promote liveability Legibility: create an identity</p> <p>Improve economies of scale</p> <p>Create sustainable communities with access to public transport network</p>

REGION & PROJECT	DETAIL	RATIONALE
Ga –Rankuwa Industrial Node	<ul style="list-style-type: none"> -Cycle paths -Tree planting & street furniture <p>Linkage between Rosslyn, Ga-Rankuwa and Babelegi Industrial Estates Rail infrastructure upgrade for logistics</p>	<p>Create sustainable communities with access to public transport</p> <p>Improve connectivity and accessibility</p>
Mabopane Node	<p>Rental Housing -Investigation of possible Rezoning of Mabopane N Township to high density residential development Approximately 30 vacant stands in Mabopane N (+-10Ha will yield 8 000-1000 units). The relocation of the industrial land use will have to be investigated including the feasibility of the proposed rezoning</p> <p>Mixed land uses in support of (T.O.D) Spatial Integration Upgrade of taxi and bus ranks Retail and offices Cater for Informal Traders (African Market) stalls Thusong Centre linked to Bodibeng Library</p> <p>Spatial Integration Access road between Mabopane and Soshanguve - Pedestrian air bridge to link Mabopane Central City & station Linkage between Mabopane and Soshanguve</p> <p>Accessibility and Connectivity Traffic control Rehabilitation of Buitekant Street</p>	<p>Improve connectivity and accessibility</p> <p>Create liveability communities supported by a range of services and public transport infrastructure</p> <p>Create liveability communities supported by a range of services and public transport infrastructure</p> <p>Legibility: create an identity</p> <p>Create liveability communities supported by a range of services.</p>
West of Mabopane	<p>Mixed uses (T.O.D) Taxis/bus ranks Expansion of the existing shopping centre Student accommodation -Investigation still to be conducted and feasibility thereof</p> <p>Recreational Heroes Theme Park Node Nooitgedacht dam – Conceptualise recreational Node to revive west of Mabopane linking with Madibeng Municipality</p>	<p>Create quality and sustainable environment Create liveability communities supported by a range of services and public transport infrastructure.</p> <p>Create quality public environment to attract investment and promote liveability</p>
Soshanguve South	<p>T.O.D. and Social / Rental Housing High Density Human settlement interventions at Kopanong Node Retail Development on strategic land parcel Upgrade existing facility to a Thusong Centre Nodal sporting facility NMT with landscaping around the node Linkage between West and East of the node to capitalise on the T.O.D. and Resort activities. TRT Terminus and Feeder line Linkage with PRASA Rail Modernisation Project.</p>	<p>Create liveable communities supported by a range of services and public transport infrastructure.</p> <p>Unlock development opportunities Promote Job creation Create quality and sustainable environment</p>
Soshanguve H	<p>Upgrade the Social Node Upgrade redundant taxi facility Build student accommodation Thusong Centre (Soshanguve F)</p>	<p>Create liveability communities supported by a range of services and public transport infrastructure.</p>
Winterveld		<p>Create liveability communities supported by a range of services and public transport</p>

REGION & PROJECT	DETAIL	RATIONALE
	<p>Spatial Integration Provide pedestrian bridge between Magistrate Court and the taxi rank Pedestrian walkways and landscaping along Aubrey Matlala and Bushveld Include public transport feeder to Mabopane Station</p> <p>Upgrade the Social Node Thusong centre Agriculture / farming</p> <p>Infrastructure upgrade project currently on-going for roads and stormwater and should be continued</p>	infrastructure.

Table 85: Region 1 Spatial Interventions



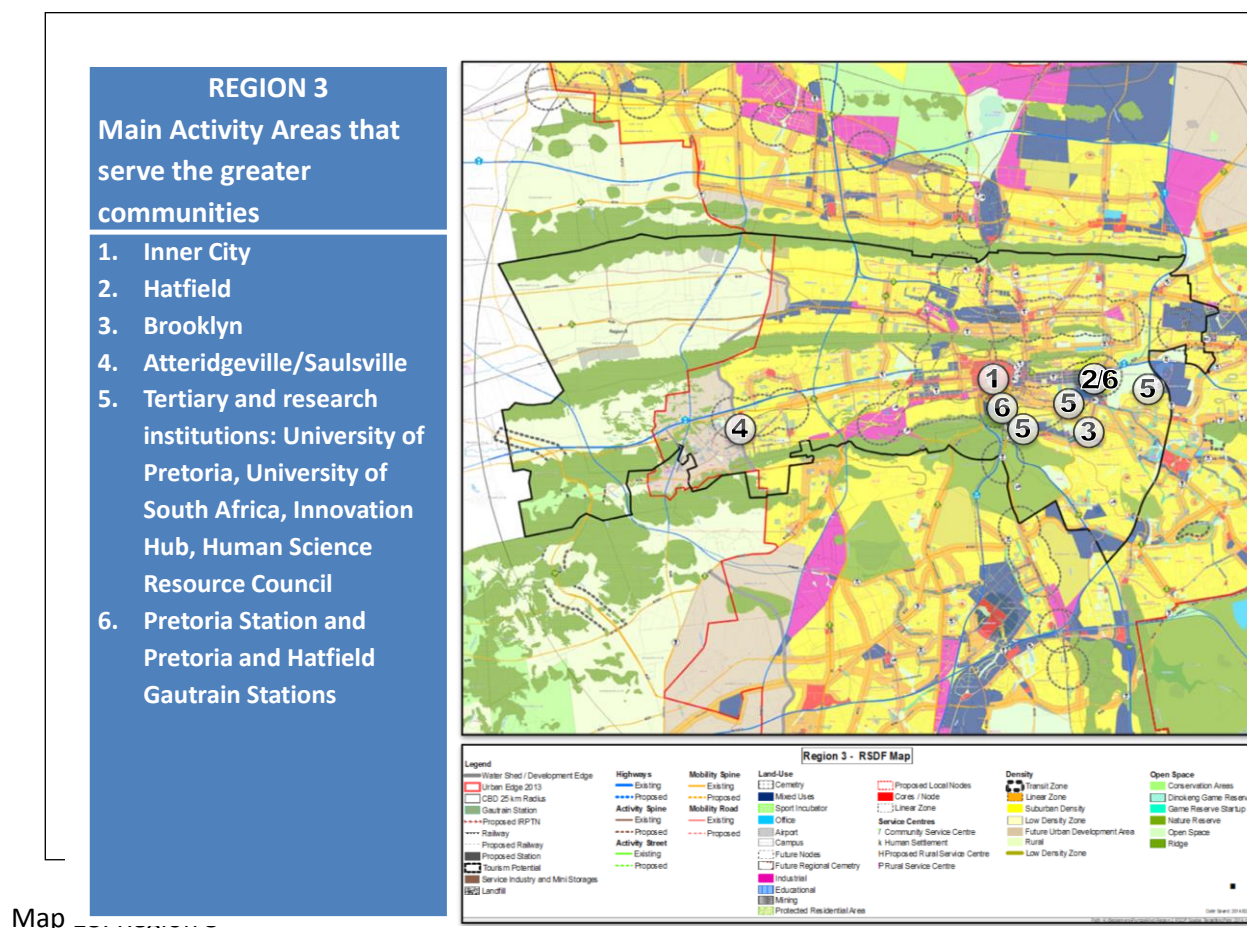
Map 17: Region 2 Spatial Interventions

REGION & PROJECT	DETAIL	RATIONALE
Region 2		
Babelegi industrial Node	Revitalisation Project Infrastructure upgrade project	Promote aesthetic form Job creation (EPWP) Attract investors
Dinokeng Reserve	Branding Dinokeng Game Reserve Project	Promote garden city concept Tourist attraction Exploit comparative advantage
Wonderboom Airport	Linkage of Lintvelt and N4 Project Linkage with TRT and Gautrain Station via a public transport system Construction of other road network to improve accessibility and connectivity	Improve access and increase threshold of passengers Promote accessibility Promote use of the airport Strategically position the airport
Sefako Makgatho Link	Road Extension Project (upgrading Sefako Makgato to join Rachel De Beer) Medium to Long Term Project	Reduce traffic congestion Stimulate private investment (Expansion of Rainbow Junction: approved mixed development of 550 000 square meters. Promote job opportunities
Onderstepoort Hub	Upgrade of sewerage works project Water Reservoir Project Urban Design Framework Science Hub (Onderstepoort Biological Products (manufacturing of animal injections and medicines), Foot and Mouth Centre and expansion of University of Pretoria: Veterinary Science Campus.	Unlock development opportunities Promote Job creation Create quality and sustainable environment
Cultural Village	Cultural Village Project	Strengthen tourism belt Create job opportunity Promote social cohesion Celebrate cultural heritage
Jubilee Road link	Landscape and Streetscape Project Resort facility	Beautification Activity street Strengthen tourism belt
Greening Stinkwater Project	Public Open Spaces Project (Sports grounds and Park [proposed Erf 1501 Kudube Unit 5])	Sustainable Human Settlement Promote aesthetic form Promote social cohesion
Tshwane Dam	Resort Facility Project (canoeing and fishing)	Promote tourism Promote aesthetic form

Table 86: Region 2 Spatial Interventions

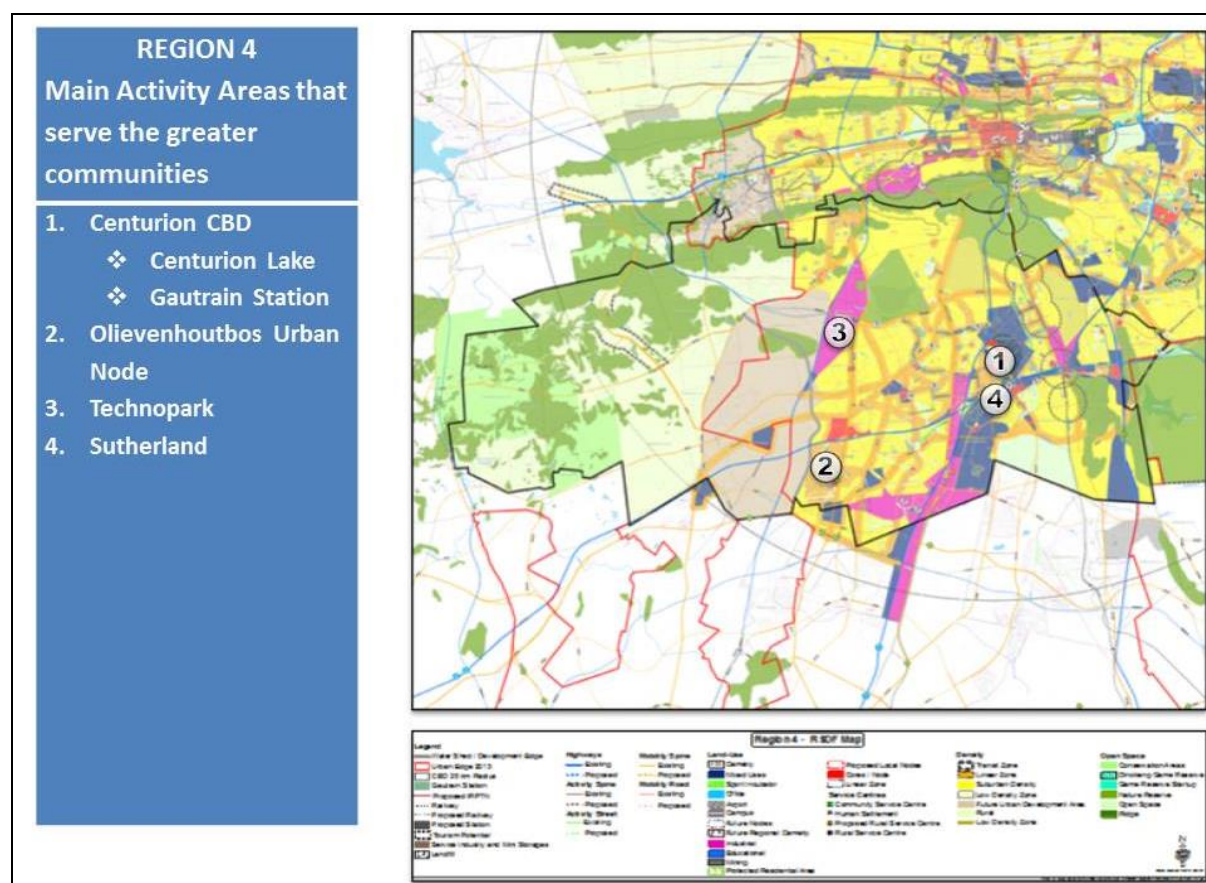
REGION & PROJECT	DETAIL	RATIONALE
Region 3		
Atteridgeville/Saulsville Node	Develop a vibrant street scape link between Atteridgeville Station and Lucas Masterpieces Moripe Stadium Encourage pedestrian movement Active street life – support retail / entertainment Mix land uses – retail on street, residential above. Medium density residential	Create liveability communities supported by a range of services and public transport infrastructure Unlock development opportunities Promote Job creation Create quality and sustainable environment
Hatfield Node	Promote the approved Urban Framework and contribute by providing walkways, bicycle lanes, landscaping along public roads and extend the design elements beyond the boundaries of the development Service Delivery Costs The approximate services costs are: Roads upgrade: R260 million Water and Sewer bulk capacity and network upgrade: R85 million Electricity bulk supply and network: R130 million. Total estimated costs: R475 million	Infrastructure investment catalyses capital investment. The Hatfield SDF has the potential to generate between R53 billion and R107 billion for the property market. The potential property tax income for the City of Tshwane is estimated to be approximately R28 800 000 per annum or R2 400 000 per month

Table 87: Region 3 Spatial Interventions



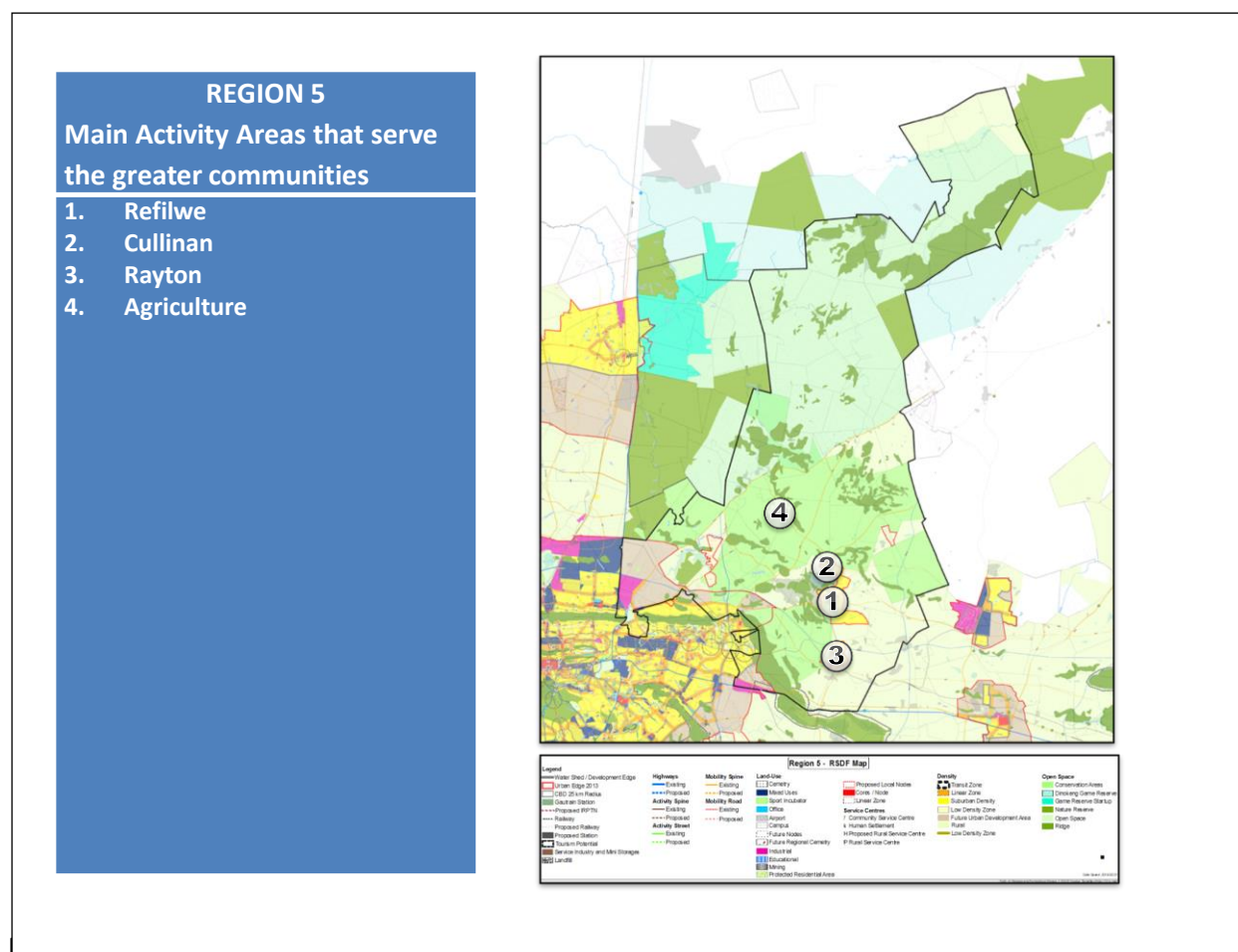
REGION & PROJECT	DETAIL	RATIONALE
Region 4		
Olifantsfontein Waterworks	Poor water quality has made the Centurion Lake an unattractive setting for developers, tourism and recreation. Inclusion of a Waterworks facility on the southern boundary of Region 4 is urgently necessary to prevent polluted water to enter Tshwane's water system	Maintenance and upgrading of existing weirs and silt traps Agreement with Agricultural Research Council to use or buy part of the Remainder of 41 of the farm Doornkloof 391 JR Environmental Authority Water License Appoint Engineer consultants to compile design and Construction Plan Private investment is available CoT to enter into an agreement with the developer (Eastern Centre Shareblock (proprietary Limited)). Provide water connections
Doringkloof urban park	Creating an unique and vibrant park with outdoor gym facilities, running track, exhibition areas, play areas, tea garden etc. The project will lead the way forward for creating active workable parks for the City.	CoT to invest in the intermodal facility to be developed as part of the new Prasa station Extent the Public Transport (TRT) into the area Promote the approved Urban Framework and contribute by providing walkways, bicycle lanes, landscaping along public roads and extend the design elements beyond the boundaries of the development
Irene Emerging Node intermodal facility	This is achieved with a variety of land uses such as housing, offices, retail, an educational node, light industries etc, all which is focused on a pedestrian and public transport orientated development . The holistic approach to achieve this is contained in an Urban Framework.	-The aim of these developments is to create a unique urban area where people can live, play and work.Land has been earmarked. (Done) -The land owners and the Municipality go into an agreement of providing their land for development in exchange for services provided and township establishment by the Municipality. (Cosmo City proposal).
Mixed use residential development along R55	Availability of services (including sewerage network). On the proposed TRT Route. Land owners that understand the vision of the area. Included in existing approved frameworks. Consolidated portions of land. No Dolomite Samrand Industrial development in close proximity. Accessibility, K73, K54 Samrand, Waterberg road. N14, R55 and N1 existing local distributors. Monavoni Nodal Development. Linking with Joburg and Tshwane proposed TRT. Linking with existing facilities in Olievenhoutbos.	Create an Industrial Hub for manufacturing (no storage) with monetary relief Gauteng Provincial Departments
Legong Street	Optimum location/ accessible/close to workforce /vacant land	
Sunderland Ridge / Olievenhoutbos Job opportunities	Provincial linkage between North of Tshwane with Johannesburg/western north south mobility spine/ PWV 9 will unlock the linear area on the same scale as the N1 on the east/PWV 9 will unlock the "Future Development Area" for Region 4 as well as the Olievenhoutbos areas to the south of Region 4 and nodal development/job opportunities at Sunderland Ridge and Erasmia.	
PWV 9		

Table 88: Region 4 Spatial Interventions



Map 19: Region 4

REGION & PROJECT		DETAIL	RATIONALE
Region 5			
Dinokeng Reserve		Branding Dinokeng Game Reserve Project	Promote tourism
Nodal Development		Public transport into The CBD Need: Bus Rapid Transit newly included towns but also rural communities with Thusong Centres	Unlock development opportunities Promote Job creation Create quality and sustainable environment
Moloto Transport Link		Moloto Road Provincial Project links with Baviaanspoort Road. Improve Linkages between N1 and N4	Gauteng Provincial Departments
Intensive interventions	Agricultural	Intensive agricultural uses , such as chicken farming, Cattle farming, wholesale nurseries etc	Integration of the dispersed settlements Local Economic development (Agricultural)



Map 20: Region 5

REGION & PROJECT		DETAIL	RATIONALE
Region 5			
Dinokeng Reserve		Branding Dinokeng Game Reserve Project	Promote tourism
Nodal Development		Public transport into The CBD Need: Bus Rapid Transit newly included towns but also rural communities with Thusong Centres	Unlock development opportunities Promote Job creation Create quality and sustainable environment
Moloto Transport Link		Moloto Road Provincial Project links with Baviaanspoort Road. Improve Linkages between N1 and N4	Gauteng Provincial Departments
Intensive interventions	Agricultural	Intensive agricultural uses , such as chicken farming, Cattle farming, wholesale nurseries etc	Integration of the dispersed settlements Local Economic development (Agricultural)

Table 89 Region 5 spatial interventions

Map 21: Region 6

REGION 6 Main Activity Areas that serve the greater communities

1. Menlyn Node
2. Mamelodi Node
 - ❖ Eerste Fabrieke
 - ❖ Denneboom
 - ❖ T-Section
 - ❖ Green View
3. Research Council
4. Botanical Gardens
5. Moretele Park
6. Watloo

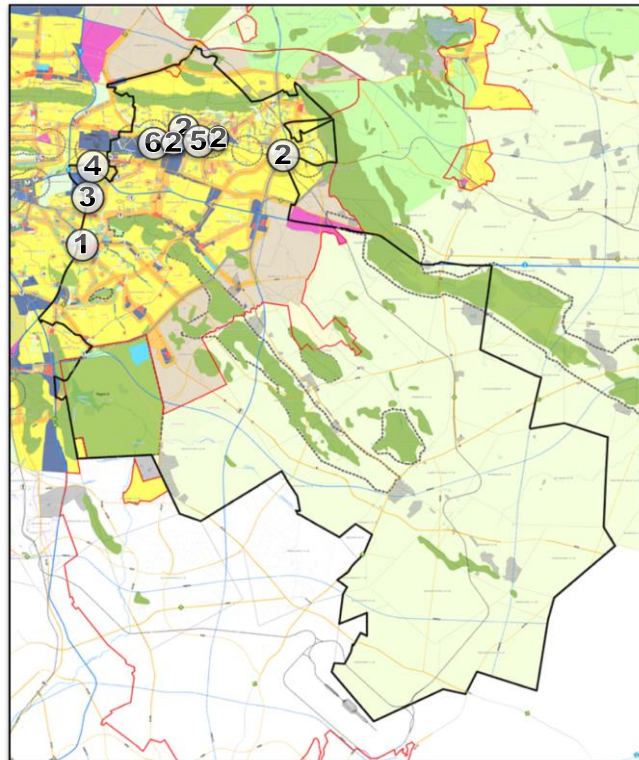


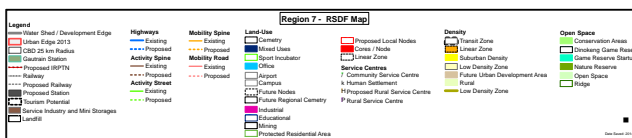
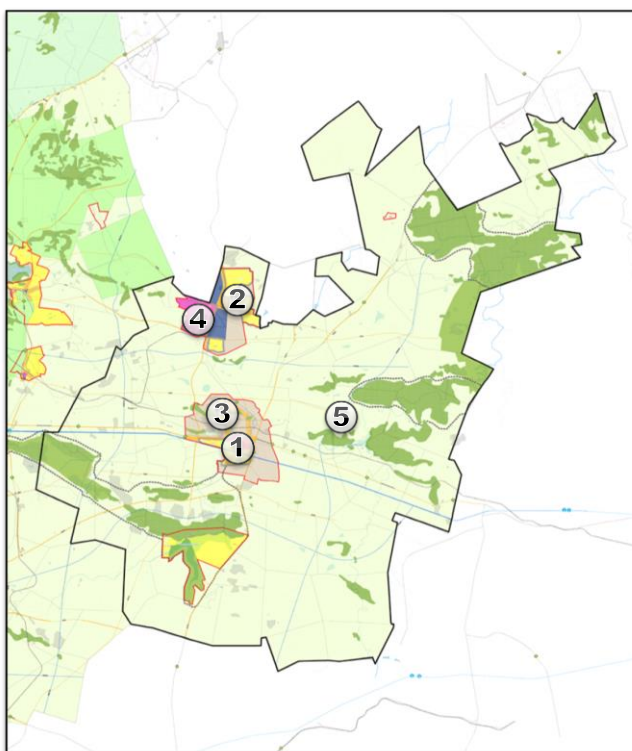
Table 90: Region 6 Spatial Interventions

Map 22: Region 7

REGION 7

Main Activity Areas that serve the greater communities

1. Bronkhorstspuit
2. Ekangala
3. Zithobeni
4. Ekandustria
5. Agriculture



REGION & PROJECT	DETAIL	RATIONALE
Region 7		
Ekandustria infrastructure upgrade	Infrastructure upgrade Development and packaging of Investment Incentives	Regeneration/ Revitalisation Re-investment Job creation-EPWP
Ekangala , Rethabiseng, Zithobeni, Sokhulume	Streetscaping the streets Alienation of land for parks within Township Entrance Gates	Identity and township image Sustainable Human Settlements Promote social cohesion
Bronkhorstspuit Dam, Die Drie , Na Hue Buddhist Temple	Branding and Marketing of the Camping/Nature reserve Multi-Cultural Village	Promote tourism
Bronkhorstspuit town	Church Street beautification Provide density bonuses for investors Erf R/14: Old Biscuit Mill concept	Curb “out-shopping” Place making Social cohesion
Leeuwfontein Agri – Village	Agri-Village Land acquisition for others Establishment of Tshwane Fresh Produce	Integration of the dispersed settlements Local Economic development (Agricultural)

Table 91: Region 7 Spatial Interventions

URBAN NETWORKS STRATEGY:

URBAN HUBS, INTEGRATION ZONES AND THE URBAN NETWORK STRATEGY OF THE CSP PROGRAMME WITHIN THE CONTEXT OF THE TSHWANE'S STRATEGIC SPATIAL PLANNING

Tshwane's spatial vision is to become a *Spatially Efficient Capital City that is Sustainable, Competitive and Resilient*. Two of the spatial building blocks that will be required to achieve this are:

- Nodes and Activity Areas
- Movement and Connectivity

Nodes are those parts of the city where development should be focused (spatial targeting).

The Tshwane's intention is to restructure the fragmented, inequitable and inefficient urban form to create more equitable, efficient and environmentally and financially sustainable urban space. The MSDP advocates for a development approach that is focused on the concentration of high density residential land uses and intensification of non-residential land uses in nodes around transit stations such as the Gautrain, TRT, Rail and other formalized intermodal transport facilities (transit-oriented development/ TOD). And This TOD relates directly to the Urban Network Strategy.

Within the Tshwane nodal context, the MSDP identifies the Capital Core, Metropolitan nodes and Urban Cores. The Capital Core refers to the Inner City, to which all nodes should have connectivity via an integrated and efficient public transport system, in order to ensure the sustainability of each node. These speak directly to the Urban Network Strategy of the CSP programme. Metropolitan nodes are established, well-developed nodes in the city, having had a history (and continuation) of private sector investment.

Urban Cores are former township areas that were developed as a result of forced relocation programmes. Inevitably, these townships grew to accommodate large populations of low income or unemployed people. The economic circumstance was clearly evident in the quality of the physical environment. Under the new government which was established in 1994, these township areas were identified, not as a blight in the urban fabric as previously thought of, but as beacons of opportunity, through the human capital that was concentrated within the various communities of the townships. Due to the great need that often belies such nodes, the government has to play a more active role in social and economic restructuring, especially in view of the limited private investment, relative to Metropolitan cores. The Neighbourhood Development Programme (NDPG) is a nationally funded programme that aims to address the improved quality of environment in urban cores.

Relative to the UNS strategy, urban cores within Tshwane's context are then the equivalent of UNS's urban hubs. The 'movement and connectivity' between (and inclusive of) each urban core/ urban hub then delineates various integration zones.

Interpretation of terminology is tabulated below to assist with the ease of cross-referencing.

Table 93

TSHWANE MSDF	TSHWANE RSDF	TREASURY CSP/ UNS
Capital Core/ Tshwane CBD	CBD	CBD
Metropolitan Node	Metropolitan Node	Developed area
Metropolitan Node	Metropolitan Node	Established corridor node
Urban Core	Urban Core	Underserved node/ Urban hub
Specialised Nodes		
Spatial Development Framework/ Spatial Development Concept	Spatial Development Framework	Urban Network Planning
Areas anchored by urban chores and connected by movement systems and/or networks that connect to the CBD. An integration zone can thus include various elements such as other nodal typologies that are picked up along the movement system.	Areas anchored by urban chores and connected by movement systems and/or networks that connect to the CBD. An integration zone can thus include various elements such as other nodal typologies that are picked up along the movement system.	Integration zone/ Interchange Zone/ Hub to city connectivity: Spatially targeted areas in which alignment of public interventions, prioritisation of network elements (CBD, urban hubs, secondary nodes, transport links and activity corridors) and implementation of relevant strategies and policies will allow for impactful spatial transformation.
Metropolitan node	Metropolitan node	Existing municipal node
Development Corridor	Mobility corridor, primary route network	Primary network
IRPTN	IRPTN	Primary public transport Link/ Hub to city connectivity
Urban Corridor/ Activity Spine	Activity Corridor	Activity Corridor
Precinct, anchor	Local Node	Urban Hub
		Urban Network
Anchor precinct or emerging node within an existing metropolitan node or urban core		Secondary node
Metropolitan nodes and/or urban cores		Existing Municipal Nodes

C4: TSHWANE URBAN HUBS: PREPARATION OF CATALYTIC PROJECTS

During the 2013/14 financial year, National Treasury, through the UNS approach, identified four urban hubs (which will serve as the central point for integration zones) within Tshwane. These are:

- Atteridgeville
- Mabopane
- Mamelodi

- Hammanskraal

During the 2014/15 financial year, Tshwane will propose that Ga-Rankuwa is added as an urban hub within the context of UNS.

The following includes some of the proposed strategic interventions that are currently under discussion within the different urban hubs in the City of Tshwane. The interventions or programmes are, in a “nutshell” what the city aims to strategically achieve in particular areas within the urban cores to ensure spatial transformation.

MAMELODI URBAN HUB

Housing Analysis

Objective

The objective of the housing analysis is to determine the number of residential housing units that can be developed within Mamelodi.

Methodology

To determine the number of housing units that can be accommodated within Mamelodi, the following methodology was followed:

- In line with the recommendations of the Sustainable Human Settlement Plan (SHSP), available land for housing was identified. This included:
 - Receiving areas to accommodate new residential developments; and
 - In-situ upgrade areas i.e. areas where informal settlements currently exist, but are to be upgraded to accommodate formal housing.
- Transit Orientated Development (TOD) nodes were identified. TOD nodes are assumed to be located within a 1km radius of existing and future rail stations, as well as future TRT stations.
- Residential land within the TOD nodes was then identified by overlaying the receiving areas and in-situ upgrade areas onto the identified TOD nodes. Those that fall within the TOD nodes represent the areas for future housing development – refer to Figure 1.
- The number of housing units that may be accommodated within the TOD nodes was since determined, in line with the following assumptions:
 - 60% of the residential areas within the TOD node may be considered as developable land, where the remaining 40% is to accommodate roads, open space, community facilities etc.
 - 60% of the developable area is to accommodate low-income housing units, the remaining 40% is to accommodate middle-income housing units.
 - Low income units are assumed to be a size of 65m².
 - Middle income units are assumed to be a size of 115m².
 - 3 storey walk ups are to be developed. In line with this assumption, a residential FAR of 2.0 was utilised, assuming the ground floor is to be developed for commercial purposes.

- The developable areas are all available and viable for housing development.

Estimation of Housing Units

In line with the methodology, as outlined in the preceding section, it is expected that the following number of housing units are to be developed within Mamelodi – see Table 2. A more detailed table has been included in Figure 1: **Developable Areas for Residential Development**

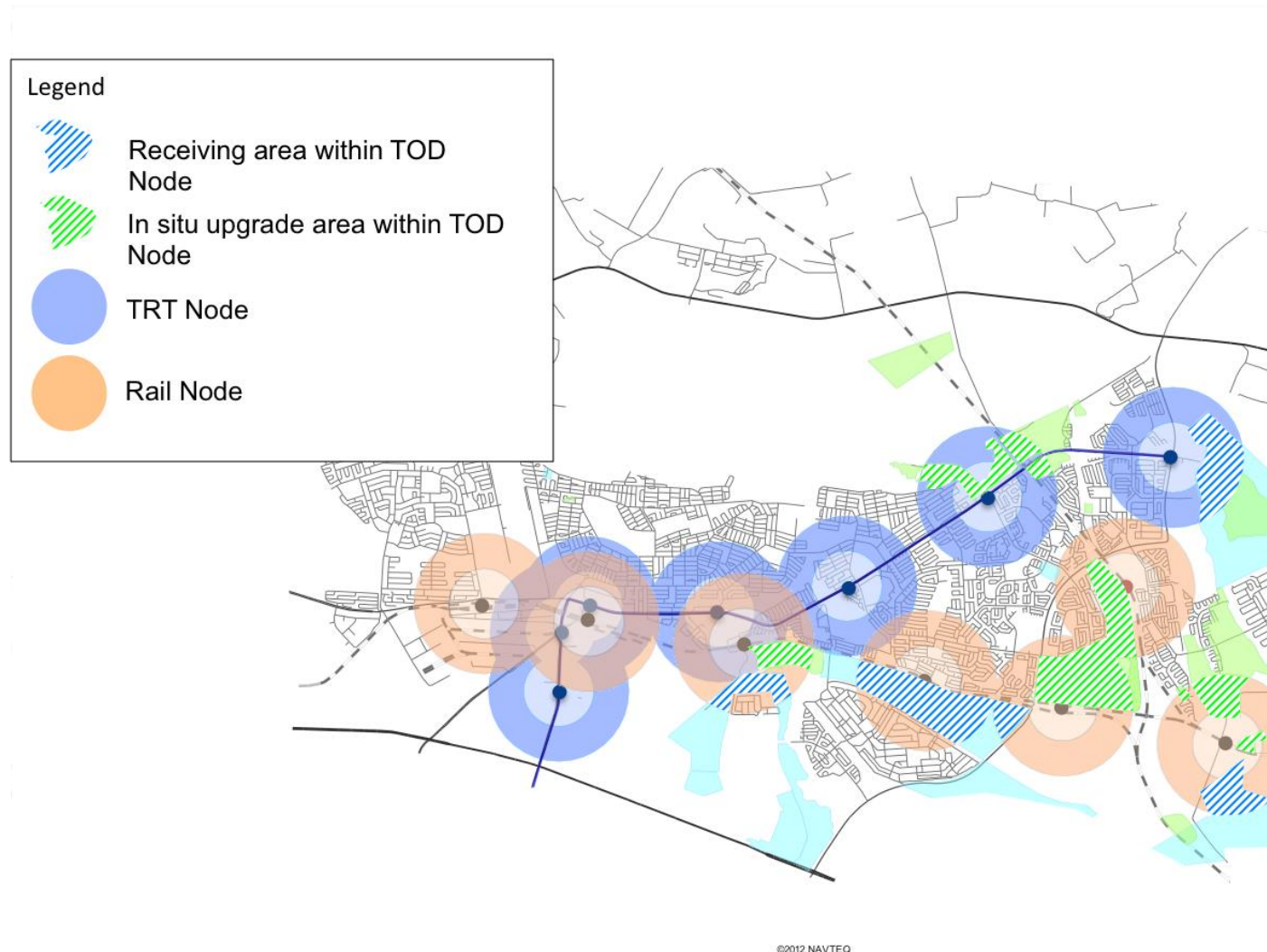


Table 3.

Table 2: Expected Number of Housing Units - Summary

Area Type	Low Income Housing Units	Middle Income Housing Units	Total
SHSP Receiving Area	27 809	10 480	38 289
In Situ Upgrade	30 784	11 600	42 384
Total	58 593	22 080	80 673

Figure 1: Developable Areas for Residential Development



Table 3: Expected Number of Housing Units - Calculation Detail

Station Precinct	Area within Node (m ²)	Area Type	Developable Area (m ²)	Low Income Housing				Middle Income Housing				Total Units
				Area (m ²)	FAR	Total Area (m ²)	Units	Area (m ²)	FAR	Total Area (m ²)	Units	
Eerste Fabrieke	304 040,4	SHSP Receiving Area	182 424,2	109 454,5	2,0	218 909,1	3 368	72 969,7	2,0	145 939,4	1 270	4 638
Mamelodi Gardens	1 012 237,7	SHSP Receiving Area	607 342,6	364 405,6	2,0	728 811,1	11 213	242 937,0	2,0	485 874,1	4 225	15 438
Greenview	167 673,5	SHSP Receiving Area	100 604,1	60 362,4	2,0	120 724,9	1 858	40 241,6	2,0	80 483,3	700	2 558
Pienaarspoort	374 159,5	SHSP Receiving Area	224 495,7	134 697,4	2,0	269 394,8	4 145	89 798,3	2,0	179 596,5	1 562	5 707
Future Station	2 607,0	SHSP Receiving Area	1 564,2	938,5	2,0	1 877,1	29	625,7	2,0	1 251,4	11	40
TRT Station 51	3 914,3	SHSP Receiving Area	2 348,6	1 409,2	2,0	2 818,3	44	939,4	2,0	1 878,9	17	61
TRT Station 52	9 267,7	SHSP Receiving Area	5 560,6	3 336,4	2,0	6 672,7	103	2 224,2	2,0	4 448,5	39	142
TRT Station 57	636 288,1	SHSP Receiving Area	381 772,9	229 063,7	2,0	458 127,4	7 049	152 709,1	2,0	305 418,3	2 656	9 705
TRT Station 53	566 056,0	SHSP In Situ Upgrade Area	339 633,6	203 780,2	2,0	407 560,3	6 271	135 853,4	2,0	271 706,9	2 363	8 634
Eerste fabrieke	267 111,3	SHSP In Situ Upgrade Area	160 266,8	96 160,1	2,0	192 320,1	2 959	64 106,7	2,0	128 213,4	1 115	4 074
Greenview	973 181,6	SHSP In Situ Upgrade Area	583 908,9	350 345,4	2,0	700 690,7	10 780	233 563,6	2,0	467 127,1	4 062	14 842
Future Station	555 542,2	SHSP In Situ Upgrade Area	333 325,3	199 995,2	2,0	399 990,4	6 154	133 330,1	2,0	266 660,3	2 319	8 473
Pienaarspoort	417 083,2	SHSP In Situ Upgrade Area	250 249,9	150 150,0	2,0	300 299,9	4 620	100 100,0	2,0	200 200,0	1 741	6 361
All	5 289 162,5	All	3 173 497,5	1 904 098,5	2,0	3 808 197,0	58 593	1 269 399,0	2,0	2 538 798,0	22 080	80 673

Infrastructure Type	Committed	Existing	Pipeline
Access Road (Class 5)		R269 500 000,00	R269 500 000,00
Arterial Road (Class 2)		R127 500 000,00	R127 500 000,00
Bulk Pipe	R14 085 820,00	R16 041 020,00	R30 126 840,00
Distributor Road (Class 4)		R75 000 000,00	R75 000 000,00
Other 1		R25 000 000,00	R25 000 000,00
Other 2		R1 524 700,00	R1 524 700,00
Pump Stations		R2 017 120,00	R2 017 120,00
Reservoir		R65 110 340,00	R65 110 340,00
Reticulation Pipe		R45 000 000,00	R45 000 000,00
Sewer Lines		R29 577 100,00	R29 577 100,00
Sewer Outfall		R6 296 400,00	R6 296 400,00
Substation		R50 000 000,00	R50 000 000,00
Transmission Line		R0,00	R0,00
Grand Total	R14 085 820,00	R712 566 680,00	R726 652 500,00

MAMELODI INFRASTRUCTURE INVESTMENT MAP (Incl formalisation programme excluding future densification programme)

As addressed under Regional Interventions above, the Mamelodi Urban Hub will be packaged as an investment plan with the the ultimate objective of catalytic and spearheading township-led economic development through spatial targeting. This work will be achieved through the ICDG allocated for 14_15.

ATTERIDGEVILLE URBAN HUB

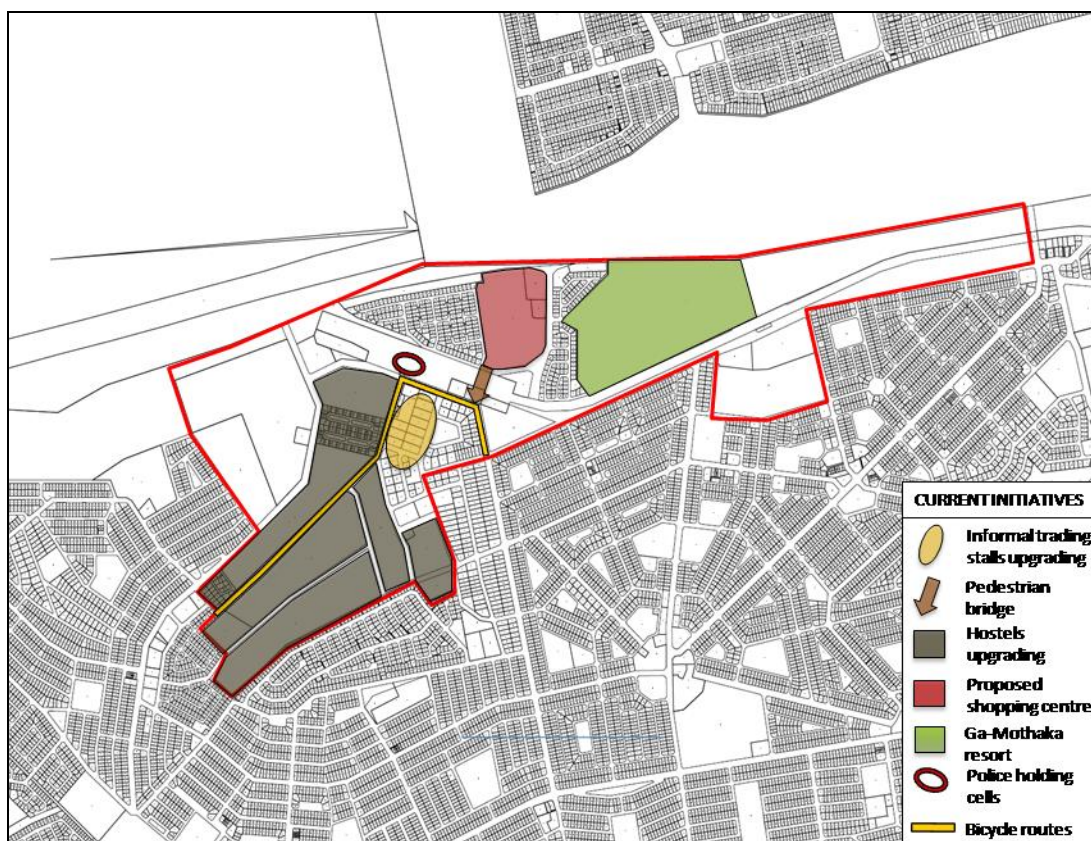
Atteridgeville, found within Planning Region 3, is west of the Inner City and is anchored by the Saulsville Station Precinct. A primarily low income area, growth is limited to the north by large extensive land uses that occupy land to the north and environmentally sensitive areas to the west. In line with the nodal concept of spatial targeting, development in Atteridgeville will be primarily reliant on re-development and urban regenerating of existing areas.

Land use in the area is predominantly medium density housing, commercial and some social facilities. Atteridgeville is accessible via the N4 and Church Street. The closest major work opportunities are the Inner City and Technopark in Centurion. The area is in great need of TOD, built environment upgrades, additional social facilities and a management strategy for informal settlements.



Map 25

The business Plan for Atteridgeville, Saulsville and Lotus Gardens were submitted in the 2011/2012 financial year for the Tsošološo Programme. These plans were submitted in February 2012, and they are in a final stage of approval. The areas around the Stations are regarded as priority nodes and focus areas for implementation as per the approved spatial development framework for the area, as depicted in the diagram below.



Map 26

An amount of R 667.9 million was allocated for capital programs in region 3 for the mid-term budget. Some of the flagship capital programs in the region included, R 13.5 million that was allocated for the construction of a new clinic Gazankulu clinic next to an informal settlement in Atteridgeville, R 55.4 million for the redevelopment of hostels in Saulsville (Phase 3b and 4a) and an amount of R 50 million for the mid-term has been allocated for upgrading of Maunde Street.

Further interventions within Atteridgeville within the context of the region are as follows: Table 94

Urban Hub	Proposed Strategic Intervention	Rationale
Atteridgeville	<p>Develop a vibrant street scape link between Atteridgeville Station and Lucas Masterpieces Moripe Stadium</p> <p>Encourage pedestrian movement</p> <p>Active street life – support retail / entertainment</p> <p>Mix land uses – retail on street, residential above.</p> <p>Medium density residential</p>	<p>Create liveability communities supported by a range of services and public transport infrastructure</p> <p>Unlock development opportunities</p> <p>Promote Job creation</p> <p>Create quality and sustainable environment</p>

MABOPANE URBAN HUB

Mabopane falls within Planning Region 1 of the City of Tshwane. Region 1 is divided by the N4 highway into a northern and southern portion, with the southern portion (inclusive of Akasia, Rosslyn and Pretoria North) being more affluent, while the northern portion (inclusive of Winterveld, Soshanguve and Ga-Rankuwa). The southern portion of Region 1 offers limited employment opportunities, primarily in the Rosslyn area. As a result, many Soshanguve residents travel to the CBD for work.

Mabopane is functionally aligned to Soshanguve to the East, and in terms of the MSDF, the two complementary nodes constitute a single catchment area. The node is therefore referred to as Mabopane/ Soshanguve in the MSDF.

Mabopane Station Precinct is one of anchors that were identified in Mabopane/ Soshanguve as a locality for the implementation of the NDPG programme together with Soshanguve South Ext14 Precinct and the Entrance Node Precinct. Mabopane Station Precinct is a multi-functional node, of 314ha in extent, which was developed in the 1970s around Mabopane Station, one of the busiest stations in the city. The Precinct also contains several taxi and bus ranks and a proposed TRT terminal. The precinct itself consists of a variety of activities. Although most activities are commercial in nature, both formal and informal, there are also several social facilities. The precinct includes Mabopane and Soshanguve Stations, the railway reserve, as well as large land uses and vacant land on either side, e.g. Giant's stadium.

In terms of NDPG Capex, a Taxi Rank has been planned for the Mabopane area during the 2014/15 financial year.

Table 95

Further strategic interventions in the area that are still under discussion include:

Urban Hub and Secondary Nodes	Proposed Strategic Intervention	Rationale
Mabopane Node	Social Housing Rezone Mabopane N Township to high density residential development Approximately 30 vacant stands in Mabopane N (+-10Ha will yield 8 000-1000 units)	Improve connectivity and accessibility
	Mixed land uses in support of (T.O.D) Spatial Integration Upgrade of taxi and bus ranks Retail and offices Cater for Informal Traders (African Market) stalls Thusong Centre linked to Bodibeng Library	Improve connectivity and accessibility Create liveability communities supported by a range of services and public transport infrastructure
	Spatial Integration Access road between Mabopane and Soshanguve -Pedestrian air bridge to link Mabopane Central City & station	Create liveability communities supported by a range of services and public transport infrastructure

West of Mabopane	<p>Linkage between Mabopane and Soshanguve</p> <p>Accessibility and Connectivity Traffic control Rehabilitation Buitekant Street</p> <p>Mixed uses (T.O.D) Taxis/bus ranks Expansion of the existing shopping centre Student accommodation</p>	
Soshanguve South	<p>T.O..D. and Social Housing High Density Human settlement interventions at Kopanong Node Retail Development on strategic land parcel Upgrade existing facility to a Thusong Centre Nodal sporting facility NMT with landscaping around the node Linkage between West and East of the node to capitalise on the T.O.D. and Resort activities. TRT Terminus and Feeder line Linkage with PRASA Rail Modernisation Project.</p> <p>Recreational Heroes Theme Park Node Nooitgedacht dam – Conceptualise recreational Node to revive west of Mabopane linking with Madibeng Municipality</p> <p>Upgrade the Social Node Upgrade redundant taxi facility Build student accommodation Thusong Centre (Soshanguve F)</p>	
Soshanguve H	<p>Spatial Integration Provide pedestrian bridge between Magistrate Court and the taxi rank Pedestrian walkways and landscaping along Aubrey Matlala and Bushveld Include public transport feeder to Mabopane Station</p>	

The planning in and around Mabopane will be influenced by the approved Soshanguve/Klipkruisontein Urban Design Framework of 2009 as depicted in the diagram below.



Map 27

MAMELODI URBAN HUB

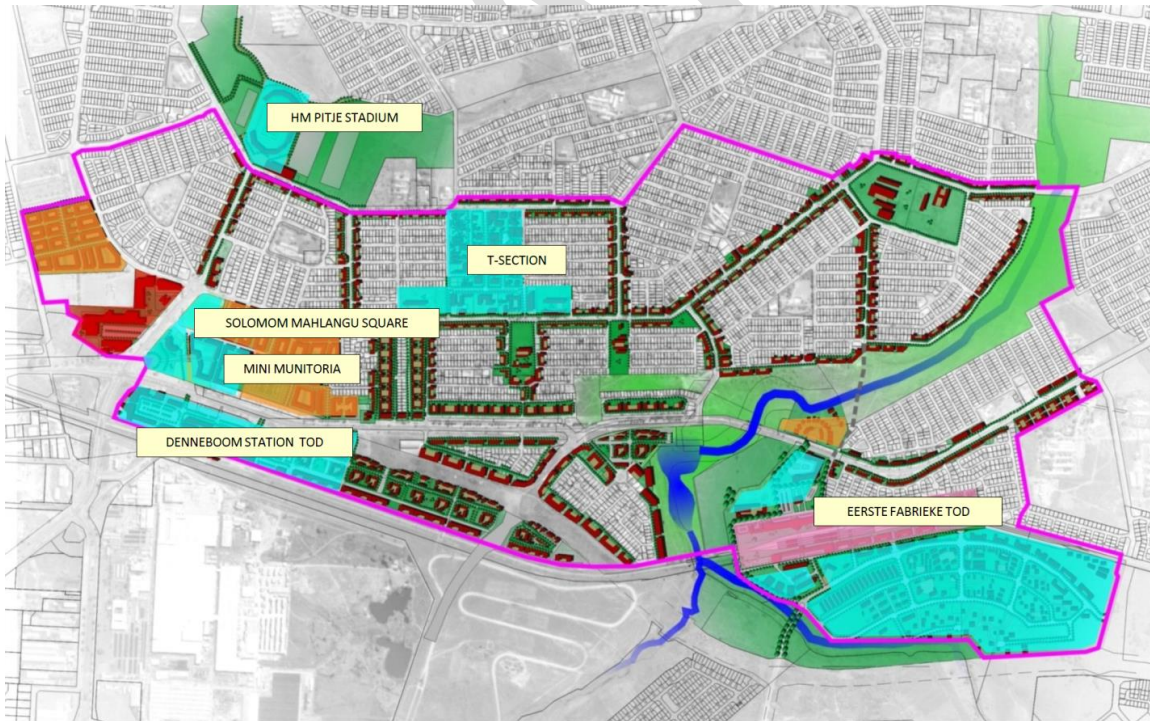
Mamelodi is an urban core within planning Region 6 and also an NDPG beneficiary. It is well-located in terms of its proximity to the Menlyn Metropolitan Node and the Waltloo and Silverton Industrial areas. It is envisaged that the first phase of the TRT will link th CBD with Mamelodi via the Gatfield Gautrain Station and the Menlyn Metropolitan Node. However, there is no land left for the expansion of Mamelodi, and development will thus be dependent on re-development and urban-re-generation projects, which is in line with the sustainable and growth management principles of the Tshwane MSDF.

Key focus areas in this regard are the provision of social facilities, higher density residential development and provision of a public realm.

Mamelodi is anchored by the following precincts

- Eerste Fabrieke
- T-Section
- Denneboom

The K16/ Tsamaya Roads, R104 (Stanza Bopape) and Pretoria Roads provide for east-west mobility. However, north-south mobility is restricted and limited to Water Meyer/ Waltloo and Solomon Mahlangu Drive. Private sector interest in the area is steadily growing and is evident in the 2 new retail developments- Mamelodi Mall and Denneboom Mall- being implemented. Stanza Bopape Precinct



Map 28

Solomon Mahlangu Freedom Square, where the "Mamelodi Massacre" took place on 21 November 1985, is a heritage site and is located just north of Denneboom Station. As part of the approved Solomon Mahlangu Precinct Urban Design Framework, it is intended that a number of projects will be implemented in and around the Freedom Square to generate greater interest and attraction to the heritage site supported by NDPG Capex.

Further strategic proposals for the Mamelodi Urban hub (subject to further detailed discussions with other role players) include the following:

Table 96

Urban hub and secondary nodes	Proposed intervention	Rationale
Mamelodi Node & T-section upgrade	Develop a vibrant street scape link between Denneboom Station and T section Encourage pedestrian movement Active street life – support retail / entertainment Mix land uses – retail on street, residential above. Medium density residential	Realise the approved Urban Framework and contribute by providing walkways, bicycle lanes, landscaping along public roads and extend the design elements beyond the boundaries of the development
Eerste Fabrieke development	Proposals include: 2 public squares; 3 public buildings; 2 taxi ranks; Main street / commercial strip; Social housing and flats; Sport and recreation facilities; and Modifications to Existing SARCC Pedestrian Tunnel	Unlock development opportunities Promote Job creation Create quality and sustainable environment

HAMMANSKRAAL HUB

The Hammanskraal Precinct is to the east of the Hammanskraal Station. It is south of Ramotse and Babelegi industrial and southeast of Temba. The area to the south is a formal middle income residential area, whereas the areas to the north and east are informal or recently upgraded low income housing. The precinct includes the station and railway reserve, the Apies River floodplain, the business centre along Douglas Rens Road as well as Hammanskraal Extensions 1 and 2.

The Spatial Development Framework makes the following proposals with regards to the spatial configuration of the Hammanskraal precinct area:

- Not only has the Hammanskraal precinct been identified as activity node, but the whole area of Temba central has been included as activity area,
- A railway line has been proposed to link the Hammanskraal station with the Soshanguve area. The proposed line will run from the Hammanskraal station, intersects with the Proposed PWV 9 and terminates in the Soshanguve area, in Tswaing Village no. 1, and
- A minor industrial strip is proposed directly north of the precinct (to the west of the K97).

The RSDF furthermore proposes certain strategic priority issues to be addressed, such as to “improve road and rail network”. It is therefore stated that *“it is essential that the proposed major road and rail network be constructed/ upgraded as a top priority in the area”*. According to the RSDF, this will ensure that the entire community is accessible and that public transport will be able to serve virtually the entire community.

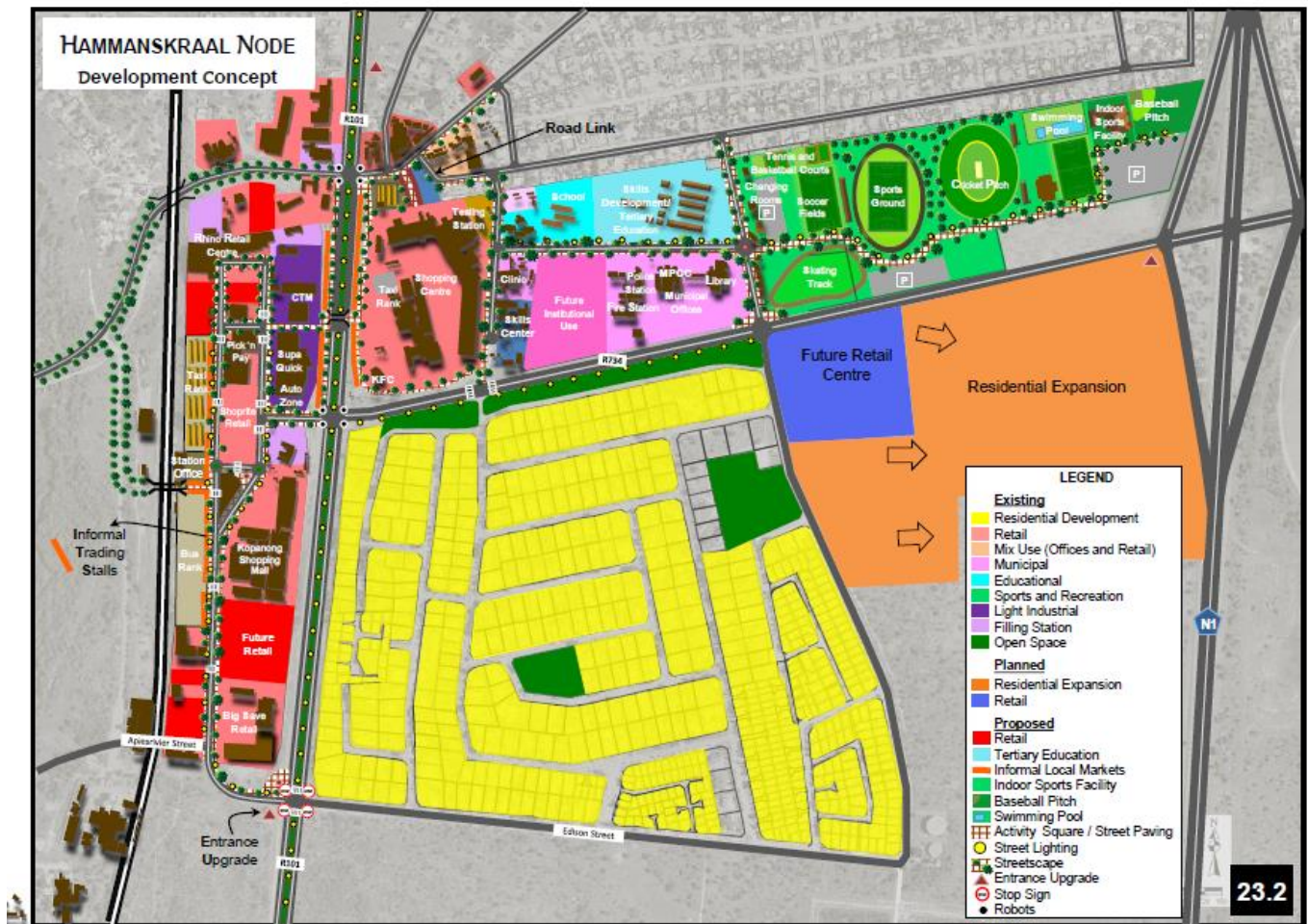
In terms of NDPG Capex, a pedestrian bridge and road upgrades have been planned for the Hammanskraal area during the 2014/15 financial year.

Table 97

Some of the Strategic Regional Interventions includes:

Area	Proposed strategic intervention	Rationale
Babelegi	Revitalisation Project Infrastructure upgrade project	Promote aesthetic form. Job creation (EPWP) Attract investors
Sefako Makgato Link	Road Extension Project (upgrading Sefako Makgato to join Rachel De Beer) Medium to Long Term Project	Lessen traffic Stimulate private investment (Expansion of Rainbow Junction: approved mixed development of 550 000 square meters. Promote job opportunities
Jubilee Road link	Landscape and Streetscape Project	Beatification Activity street

Hammanskraal Node Development Concept



Map 29

(PROPOSED) GA-RANKUWA URBAN CORE

Ga-Rankuwa area is located about 25 kilometres away from the CBD of the City of Tshwane which also represents the majority of job opportunities in the metropolitan area. About 5 kilometres to the east of Ga-Rankuwa is the Rosslyn industrial area, while the Ga-Rankuwa industrial area is located in the north-western part of Ga-Rankuwa itself. The closest surrounding retail based activity node to the Ga-Rankuwa area is Akasia Park which is located about 5 kilometres to the south of the Rosslyn industrial area, and the Mabopane CBD which is located to the north-east.

Ga-Rankuwa residents are largely dependent on public transport, which is of a low standard within the region due to poor operational conditions resulting in capacity problems. There is limited private sector investment in Ga-Rankuwa, as in the rest of the north of Region, resulting in a backlog in infrastructure provision, underdeveloped and less than desirable urban environments in some areas. Ga-Rankuwa therefore needs investment in the areas of:

- Service infrastructure

- Transport infrastructure
- Upgrading of build environment
- Economic development

The NDPG programme was aimed at addressing some of the above-mentioned challenges in former township areas- referred to as *urban cores* within the Tshwane spatial planning Context. At the time that NDPG was institutionalised, the former (delineation of) Tshwane accommodated 6 urban cores i.e. (Mamelodi, Soshanguve, Mabopane, Atteridgeville, Olivenhoutbosch and Ga-Rankuwa). Ga-Rankuwa was the only urban core that was not prioritised for NDPG support at that time. The UNS strategy, which encapsulates NDPG, comes at an opportune time and gives a strategic opportunity to prioritise Ga-Rankuwa as an urban hub. The R566/ Pilane and Hebron Roads connect to the M17/ proposed R80 which are, in turn, activity corridors between the CBD and the already identified Mabopane urban hub.

At present the three most prominent activity nodes within the Ga-Rankuwa area comprise:

- the activity area at the southern entrance to town in the vicinity of the Medunsa Campus;
- the central CBD area which is still largely vacant at present; and
- The Ga-Rankuwa industrial area.

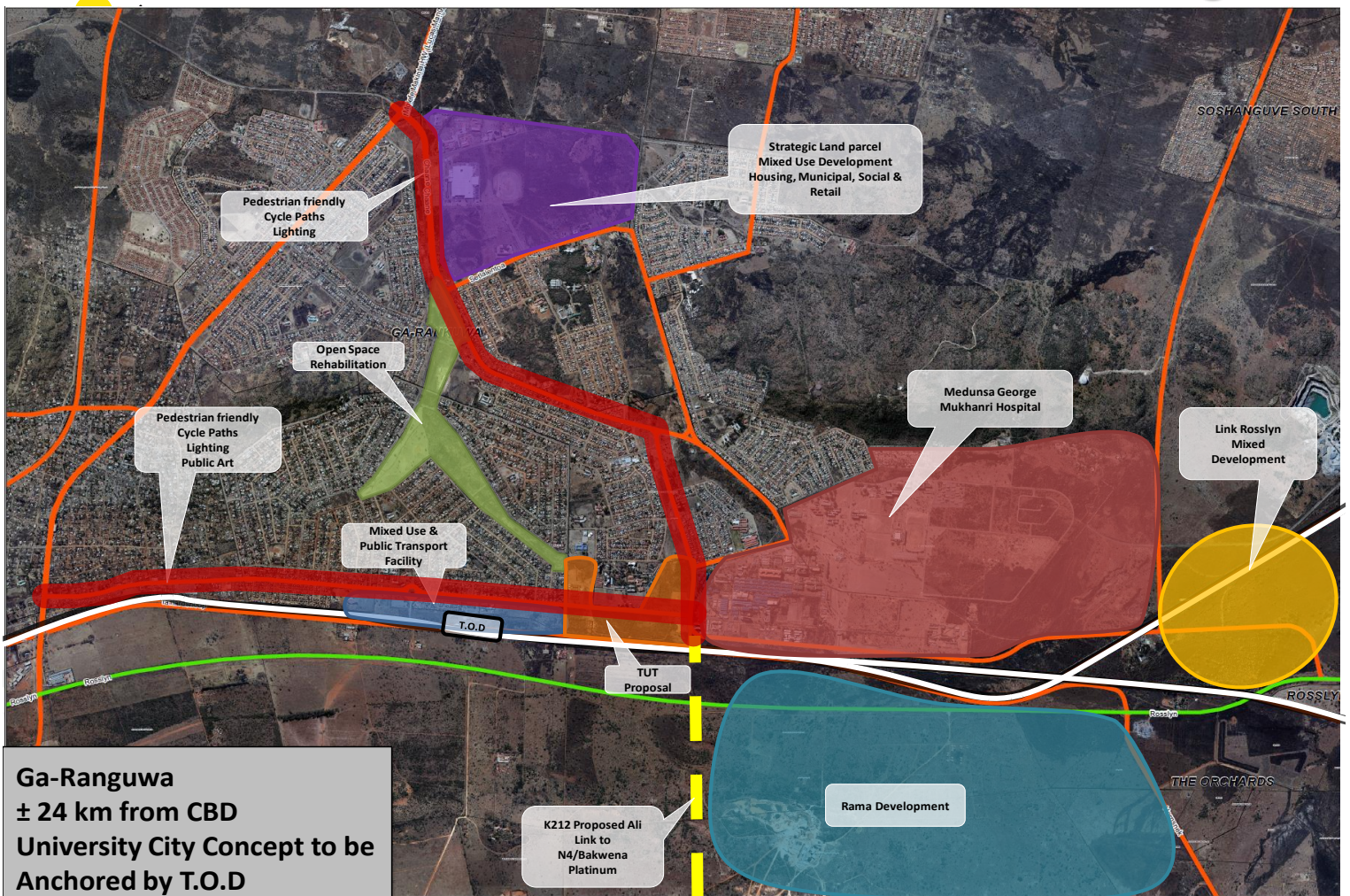
From a spatial planning perspective, the following is being discussed with regards to developing the Ga-Rankuwa urban core, but is still subject to further detailed planning and discussion with other role players. :

Table 98

Ga –Rankuwa Node	<p>Mixed Use Development Student Accommodation Recreational Activity Retail Character</p> <p>NMT along Pilane Road supported by landscaping Pedestrian and cycle route</p> <p>Upgrade Pilane and Molotlegi Streets Intersection Installation of traffic light</p> <p>NMT along M17 supported by landscaping Install signage, Pedestrian and cycle route Public transport facility Urban Agriculture Wetland Rehabilitation (Bird life)</p> <p>Electricity sub-station upgrade Support future mixed use</p>	<p>Attractive public environment to improve liveability</p> <p>Entrance to Ga-Rankuwa should promote ease of movement</p> <p>Sustainable, liveable cities promoting ease of movement and open space conservation</p> <p>Infrastructure investment catalyses capital investment.</p> <p>Activity spine development linking the Gateway Node and CBD</p> <p>Improve accessibility, connectivity Unlock development potential</p>
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	<p>development for the entire township development strategy</p> <p>Integration Zone-Molefe Makinta Road Urban agriculture -Rehabilitation of the wetland</p> <p>Extension of K212 to N4 Road Upgrade to link with N4 and further link with Molefe Makinta Road</p>	<p>Essential for industrial development Support economic growth</p> <p>Create quality public environment to attract investment and promote liveability</p> <p>Legibility: create an identity</p>
Ga –Rankuwa Industrial Node	<p>Engineering infrastructure Bulk water installation -Bulk electricity</p> <p>Public environment upgrade Pedestrian walkways -Public transport facility -Cycle paths -Tree planting & street furniture</p>	<p>Improve economies of scale</p> <p>Create sustainable communities with access to public transport</p>

Ga-Rankuwa- Region 1



Map 30

Project	Size	Region	Land Owner	Typologies	Status Quo
1. Fort West Ext 4	126 ha	3	NDPE	Fully subsidised units: 1 769 Bonded units: 439 Total: 2 208	Planning at advanced stages
2. Fort West Ext 5	155 ha	3	NDPE	Fully subsidised units: 2 969 Bonded units: 1059 Social Housing units: 1 256 Total: 5 284	Planning at advanced stages
3. Zandfontein	155 ha	3	NDPE	Fully subsidised units: 1 959 Rental/social: 462 Gap: 967 Bonded units: 692	Planning at advanced stages
5. Kirkney/ Andeon	114 ha	3	CoT	Fully subsidised units: 940 Rental units: 709 Bonded units: 71	Planning in progress
6. Olievenhoutbotch Ext 27	112.00 ha	4	CoT	Fully subsidised: 2 202 Res 1: 1 641 Res 3: 561 (i.e. walk ups) FLISP on Res 3: 1 000 Affordable Rental on Res 3: 500 Total: 3 702	Currently being implemented – by CoT and GDHS
7. Zithobeni Heights	159 ha	7	CoT	To be determined – Feasibility Studies in progress	Planning at advanced stages
8. Nellmapius Ext 22	129 ha	6	CoT	Rental units: 550 Fully subsidised units: 1330	Currently being implemented by GDHS
9. Soshanguve Ext 19	216 ha	1	CoT	Res 1: 2506 Res 3: To be determined	
10. Erf 29355 Mamelodi Ext 5	5.2 ha	6	CoT	Fully subsidised units: 275 Rental units: 75 Total: 350	Implementation in progress

11. Lotus Gardens	-	3	NDPE	To be determined – Feasibility Studies in progress	Finalisation of planning work pending. Bulk infrastructure challenges.
12. Capital Park	17ha	3	CoT	Social housing	EIA and layout plan in progress. Currently engaging HDA to provide the City with the POA.
13. Thorntree View	1 200 ha	1	Partnership with developer	Fully subsidised units: 9557 Bonded units: 10 435 GAP: 4 613 Res 3: 3 244	Currently implementing last phases of project
14. Shubart Park	-	3	CoT	Social housing	Planning in progress
15. Madiba Heights	-	3	CoT & NDPE	Social housing and FLISP	Planning at advanced stages
16. Timberland	-	3	CoT	Mixed rental & social housing: 320	Planning in progress
17. Townlands	-	3	CoT	Mixed rental & social housing: 900	Planning in progress

C4.3 IDENTIFICATION OF URBAN NETWORK, INTEGRATION ZONES AND HUBS: LAND USE MANAGEMENT SYSTEM

The introduction of the Urban Networks Strategy element of the CSP has required some extensive work to be undertaken by the city's spatial strategy team. For the purposes of this BEPP a history will be provided on respect to Tshwane's Town Planning Scheme especially in light of the recent amalgamation posing various aspect with regard to development control. Great strides have been to get the city into a composite Town Planning Scheme inclusive of all its municipal boundary. The spatial strategic interventions outlined above respond to the city's spatial vision and the erf level information in respect of development control will require more extensive work in the future financial years.

D1-D4 THE ANTICIPATED OUTCOMES AND OUTPUTS OF INVESTMENT IN THE BUILT ENVIRONMENT

D2: CITY-WIDE DESIRED OUTCOMES

The Sub-section is addressed under Sub-section C and will still be improved upon for the BEPP version to be adopted by Council.

E1-E8: A SUMMARY OF FINANCIAL ALLOCATIONS IN THE MTREF TO SUPPORT THE SPATIAL DEVELOPMENT STRATEGY

CAPITAL BUDGET

Budget guidelines relating to the compilation of the 2014/15 capital budget were compiled in consultation with the City Planning and Development Department and IDP Office of which departments used as a basis for planning. Budget indicatives were issued to departments to take into consideration and also align budget proposals to departmental business plans, objectives and targets.

The outcome of the Budget Steering Committee hearings required departments to prioritise capital projects and resource allocations within the context of affordability taking into account inter alia contractual obligations, ongoing infrastructure maintenance and executive commitments.

The compilation of the capital budget in terms of internal capacity (council funds) is based on the application of sound financial management principles in order to ensure that a funded budget is tabled. Taking this into consideration the funding capacity for the 2014/15, 2015/16 and 2016/17 financial years amounts to R3,868 billion, R4,085 billion and R4,315 billion respectively.

The Capital Budget is funded from the following sources:

- Internally generated revenue (including Public Contributions and Donations and CRR) R123,5 million.
- Borrowings R1,2 billion.
- Grant funding: R2,5 billion.

All new projects were prioritised in line with set determined affordability allocations and in terms of urgency, value for money and benefit to the city.

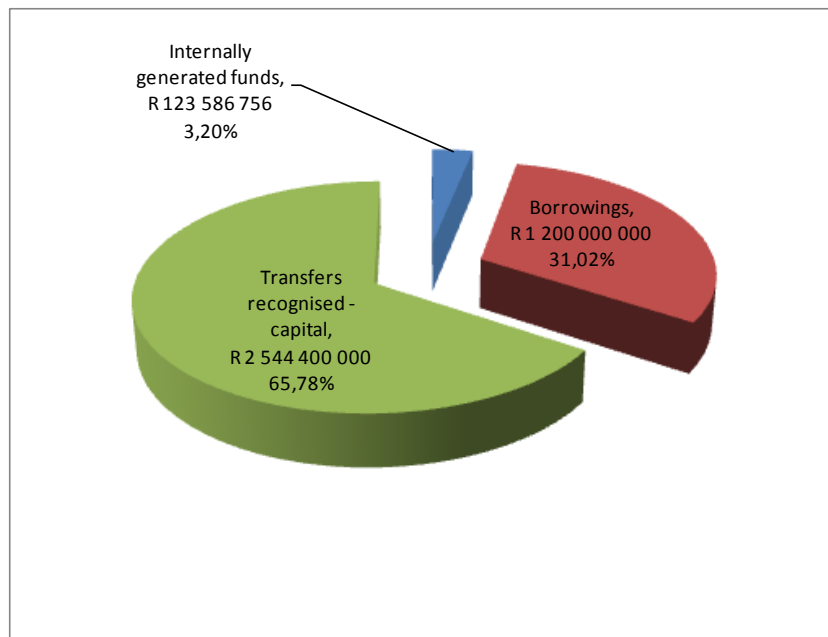
Capital Budget per funding source

The following table indicates the 2014/15 Medium-term Capital Budget per funding source:

Funding Source Description	Budget 2014/15	%	Budget Year +1 2015/16	%	Budget Year +2 2016/17	%
Council Funding	-	0,00%	308 000 000	7,54%	429 300 000	9,95%
PTIS- Public Transport, Infrastructure Systems Grant	867 571 000	22,43%	800 000 000	19,58%	812 300 000	18,83%
NDPG- Neighbourhood Development Partnership Grant	150 000 000	3,88%	80 739 000	1,98%	84 883 000	1,97%
USDG - Urban Settlements Development Grant	1 469 450 000	37,99%	1 521 361 000	37,24%	1 601 993 000	37,13%
INEP- Intergrated National Electrification Programme	32 000 000	0,83%	30 000 000	0,73%	40 000 000	0,93%
CRR- Capital Replacement Reserve	43 486 756	1,12%	46 400 000	1,14%	46 510 000	1,08%
EEDSM- Energy Efficiency Demand Side Management	10 000 000	0,26%	10 000 000	0,24%	15 000 000	0,35%
FMG - Financial Management Grant	250 000	0,01%	-	0,00%	-	0,00%
CLS - Community Library Services	3 129 000	0,08%	5 000 000	0,12%	5 500 000	0,13%
Borrowings	1 200 000 000	31,02%	1 200 000 000	29,38%	1 200 000 000	27,81%
Public Contributions & Donations	80 100 000	2,07%	83 500 000	2,04%	79 500 000	1,84%
Gautrans Grant	12 000 000	0,31%	-	0,00%	-	0,00%
Grand Total	3 867 986 756	100,00%	4 085 000 000	100,00%	4 314 986 000	100,00%

The total budget increased owing to USDG allocation transferred from the operating budget and an increase in the allocations in terms of the DoRA which was for PTIS and NDP grants.

The following graph summarises the above table in terms of the allocations per main funding source:



The following with regard to conditional grants should be noted:

Urban Settlements Development Grant (USDG)

The purpose of the USDG is to assist metropolitan municipalities to improve urban land production to the benefit of poor households, by supplementing the revenues of metropolitan municipalities to: reduce the real average cost of urban land, increase the supply of well-located land, enhance tenure security and quality of life in informal settlements, improve spatial densities and to subsidise the capital costs of acquiring land and providing basic services for poor households. The gazetted allocations amount to R1,5 billion, R1,5 billion and R1,6 billion in the 2014/15, 2015/16 and 2016/17 financial years respectively.

Public Transport, Infrastructure and Systems Grant

The purpose of the grant is to provide for accelerated planning, construction and improvement of public and non-motorised transport infrastructure and services. The gazetted allocations amount to R867,6 million, R800,0 million and R812,3 million in the 2014/15, 2015/16 and 2016/17 financial years respectively.

Neighbourhood Development Partnership Grant

The purpose of this grant is to support neighbourhood development projects that provide community infrastructure and create the platform for other public and private sector development, towards improving the quality of life of residents in targeted underserved neighbourhoods. R150,0 million, R80,7 million and R84,9 million have been gazetted for the 2014/15, 2015/16 and 2016/17 financial years respectively.

Integrated National Electrification Programme

The purpose of this grant is to implement the Integrated National Electrification Programme (INEP) by providing capital subsidies to municipalities to address the electrification backlog of occupied residential dwellings, clinics and the installation of bulk infrastructure and rehabilitation and refurbishment of electricity infrastructure in order to improve the quality of supply. R32,0 million, R30,0 million and R40,0 million have been gazetted for the 2014/15, 2015/16 and 2016/17 financial years respectively.

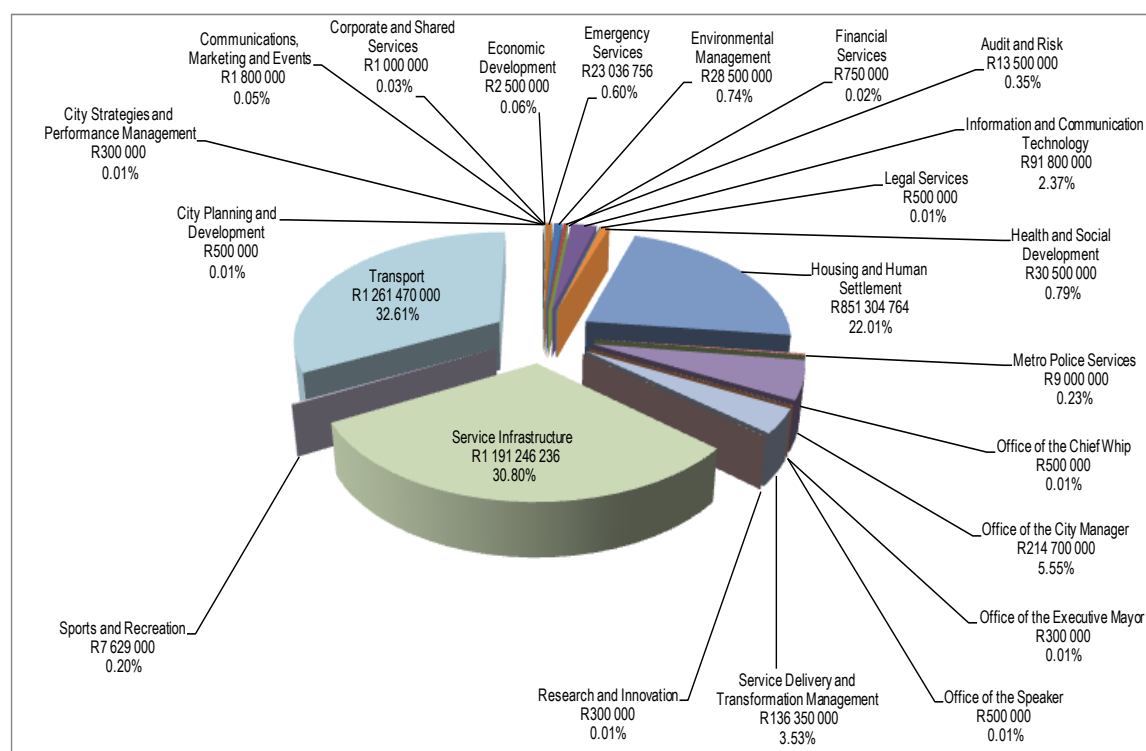
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Capital Budget per department (vote)

The following table indicates the 2014/15 Medium-term Capital Budget per Department:

Strategic Units	Budget 2014/15	%	Budget Year +1 2015/16	%	Budget Year +2 2016/17	%
City Planning and Development	500 000	0,01%	1 200 000	0,03%	1 200 000	0,03%
City Strategies and Performance Management	300 000	0,01%	500 000	0,01%	300 000	0,01%
Communications, Marketing and Events	1 800 000	0,05%	500 000	0,01%	500 000	0,01%
Corporate and Shared Services	1 000 000	0,03%	31 000 000	0,76%	31 000 000	0,72%
Economic Development	2 500 000	0,06%	4 100 000	0,10%	4 100 000	0,10%
Emergency Services	23 036 756	0,60%	5 000 000	0,12%	5 000 000	0,12%
Environmental Management	28 500 000	0,74%	41 150 000	1,01%	42 150 000	0,98%
Audit and Risk	13 500 000	0,35%	13 500 000	0,33%	13 500 000	0,31%
Financial Services	750 000	0,02%	5 500 000	0,13%	5 500 000	0,13%
Information and Communication Technology	91 800 000	2,37%	95 500 000	2,34%	95 500 000	2,21%
Legal Services	500 000	0,01%	500 000	0,01%	500 000	0,01%
Health and Social Development	30 500 000	0,79%	27 000 000	0,66%	40 000 000	0,93%
Housing and Human Settlement	851 304 764	22,01%	852 384 650	20,87%	933 016 650	21,62%
Metro Police Services	9 000 000	0,23%	13 550 000	0,33%	13 860 000	0,32%
Office of the Chief Whip	500 000	0,01%	500 000	0,01%	500 000	0,01%
Office of the City Manager	214 700 000	5,55%	132 739 000	3,25%	96 883 000	2,25%
Office of the Executive Mayor	300 000	0,01%	500 000	0,01%	500 000	0,01%
Office of the Speaker	500 000	0,01%	500 000	0,01%	500 000	0,01%
Service Delivery and Transformation Management	136 350 000	3,53%	126 100 000	3,09%	107 100 000	2,48%
Research and Innovation	300 000	0,01%	500 000	0,01%	500 000	0,01%
Service Infrastructure	1 191 246 236	30,80%	1 015 400 000	24,86%	1 103 500 000	25,57%
Sports and Recreation	7 629 000	0,20%	9 500 000	0,23%	10 000 000	0,23%
Transport	1 261 470 000	32,61%	1 707 876 350	41,81%	1 809 376 350	41,93%
TOTAL CAPITAL BUDGET	3 867 986 756	100,00%	4 085 000 000	100,00%	4 314 986 000	100,00%

The following graph illustrates the above table in terms of allocations per department:



The following table indicates the 2014/15 Capital Budget per Implementing Department. The Implementing Departments relate to departments responsible for the construction/execution of projects on behalf of the Service Delivery and Transformation Management Department. These departments as the implementing agents will therefore (during the construction phases) report monthly on the progress of implementation to the relevant Regional Executive Director, the City Manager and the Capex Committee. The Service Delivery and Transformation Management Department will receive ownership of the projects once they have been completed and will then be responsible for all finance costs and depreciation associated with the projects.

Implementing Departments	Service Delivery and Transformation Management	Departmental Budget	Total Budget
Environmental Management	30 600 000	28 500 000	59 100 000
Health and Social Development	10 000 000	30 500 000	40 500 000
Service Delivery and Transformation Management	3 750 000	-	3 750 000
Housing and Sustainable Human Settlement Development	50 000 000	851 304 764	901 304 764
Sports and Recreation	42 000 000	7 629 000	49 629 000
Total	136 350 000	917 933 764	1 054 283 764

The table above indicates the implementing departments' total capital allocation/responsibility.

Some of the main projects and key focus areas of the budget and IDP to be addressed in the 2014/15 financial year include amongst others:

Emergency Services

- Completion of the Fire House in Heuweloord - R20,0 million

Health and Social Development

- New Soshanguve Clinic - R10,0 million
- Upgrade and extension of Zithobeni Clinic - R10,0 million
- Upgrading of ECD Centres and Day Care Centre – R6,0 million

Housing and Human Settlement

Formalisation is an IDP and budget key focus area in the 2014/15 budget and the following amounts have been budgeted:

- Project Linked Housing - Water Provision - R330,2 million
- Sewerage - Low Cost Housing - R326,2 million
- Roads and Stormwater - Low Cost Housing - R71,9 million
- Project Linked Housing – Acquisition of Land - R109,3 million

Group Information and Communication Technology

- Disaster Recovery System Storage - R30,0 million
- E-Initiative supporting the Smart City - R30,0 million

Metro Police Services

- Purchase of policing equipment – R4,0 million

Office of the City Manager

Implementation of the Tsosoloso Programme funded from NDPG – R212,7 million:

- Mabopane Taxi Rank - R19,0 million
- Saulsville Walkways - R8,0 million
- Hammanskraal Bridge - R20,3 million
- Seeiso Streetscape - R35,1 million
- Atteridgeville Bridge - R17,0 million
- Hammanskraal Roads - R40,0 million
- City Hall Renovations - R42,7 million
- Tshwane House – R20,0 million

Service Delivery and Transformation Management

- Development of Parks and Traffic Islands (Backlog & New) - R20,0 million
- Saulsville Hostel - R25,0 million
- Mamelodi Hostel - R25,0 million
- Completion of Cullinan Library Park - R20,0 million
- Greening of Sportsfields - R22,0 million
- New Gazankulu Clinic – R10,0 million
- Roll out of Bulk, 240 ℓ and 1000 ℓ containers in Region 7 - R5,6 million

It should be noted that these projects will be implemented by the other relevant departments (implementing departments) on behalf of the regions.

Service Infrastructure

- Rooiwal Power Station Refurbishment - R8,0 million
- Reservoir Extensions - R57,5 million
- New Bulk Infrastructure - R130,0 million
- Replacement and Upgrading: Redundant Bulk Pipeline Infrastructure - R59,9 million
- Refurbishment of Water Networks and Backlog Eradication - R177,5 million
- Tshwane Public Lighting Program - R40,0 million
- Replacement, Upgrade, Construct Waste Water Treatment Works Facilities - R195,9 million
- Electricity for All - R292,0 million
- Replacement of Worn Out Network Pipes - R20,4 million
- Roll out of prepaid electricity meters (indigents) - R25,0 million

Transport

- Doubling of Simon Vermooten - R136,0 million
- Internal Roads: Northern Areas - R177,2 million
- Collector road backlogs – Mamelodi - R17,5 million
- TRT - Transport Infrastructure - R731,5 million

- Flooding backlogs: Networks and Drainage canals - R139,1 million

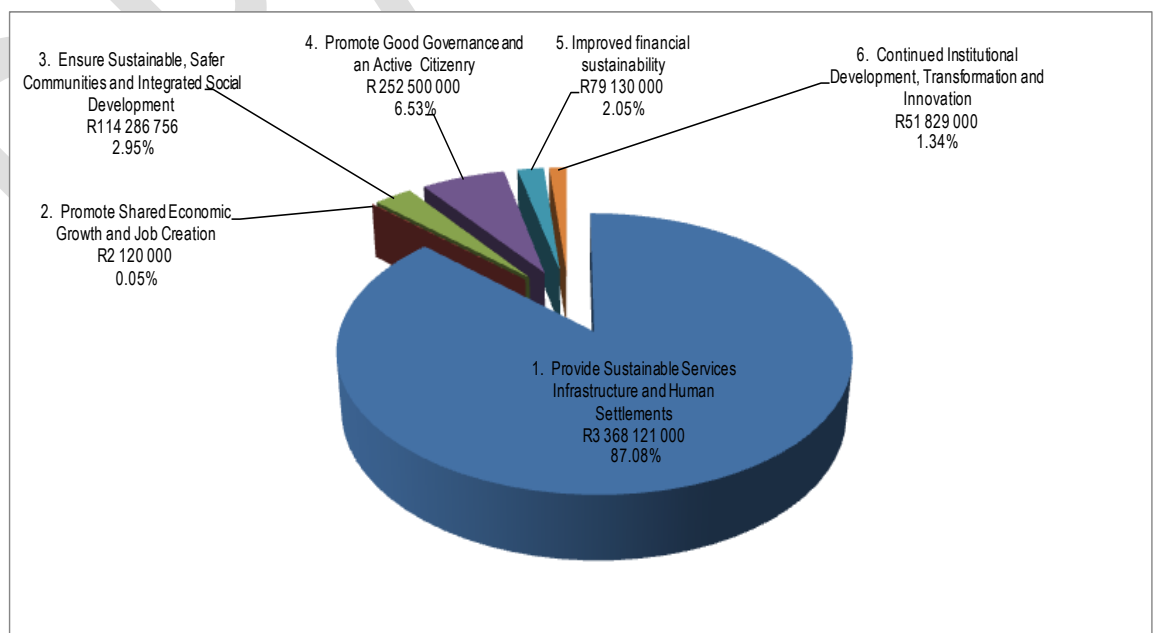
The table below indicates the capital budget per main strategic focus area:

Description	Budget 2014/15	%	Budget Year +1 2015/16	%	Budget Year +2 2016/17	%
1. Provide Sustainable Services Infrastructure and Human Settlements	3 368 121 000	87,08%	3 647 261 000	89,28%	3 907 493 000	90,56%
2. Promote Shared Economic Growth and Job Creation	2 120 000	0,05%	3 600 000	0,09%	3 600 000	0,08%
3. Ensure Sustainable, Safer Communities and Integrated Social Development	114 286 756	2,95%	75 150 000	1,84%	79 150 000	1,83%
4. Promote Good Governance and an Active Citizenry	252 500 000	6,53%	221 739 000	5,43%	185 883 000	4,31%
5. Improved financial sustainability	79 130 000	2,05%	107 500 000	2,63%	108 500 000	2,51%
6. Continued Institutional Development, Transformation and Innovation	51 829 000	1,34%	29 750 000	0,73%	30 360 000	0,70%
Total	3 867 986 756	100,00%	4 085 000 000	100,00%	4 314 986 000	100,00%

In view of the above it is evident that a large portion of the capital budget has been allocated towards strategic objective 1 which addresses infrastructure and human settlements provision infrastructure in the 2014/15 MTREF.

The balance of the funding allocations have been prioritised in terms of promoting good governance and active citizenry, improved financial sustainability, safer communities and integrated social development, shared economic growth and job creation and institutional development, transformation and innovation.

The above table is graphically illustrated as follows:



Asset Management

This table brings together the core financial elements of asset management and summarises the capital programme in terms of new assets and the renewal of existing assets.

The objective is to provide a complete picture of the municipality's asset management strategy, indicating the resources being deployed for maintaining and renewing existing assets, as well as the extent of asset expansion.

	Budget 2014/15	%	Budget 2015/16	%	Budget 2016/17	%
New	1 649 685 756	42,65%	2 008 126 395	49,16%	2 072 836 350	48,04%
Renewal	2 218 301 000	57,35%	2 076 873 605	50,84%	2 242 149 650	51,96%
Total Capital Budget	3 867 986 756	100,00%	4 085 000 000	100,00%	4 314 986 000	100,00%

In terms of MFMA Circulars 55 and 66 at least 40% of the Capital Budget must be allocated towards renewal of existing assets. From the above table it can be seen that 57,35%, 50,84% and 51,96% of the budget has been allocated for the renewal of existing assets in the 2014/15, 2015/16 and 2016/17 financial years respectively.

E 4 DESCRIPTION OF THE INSTITUTIONAL ARRANGEMENTS REQUIRED TO GIVE EFFECT TO INVESTMENT PROGRAMMES: PARTNERSHIPS

1. Tshwane Automotive City

The City of Tshwane has entered into a service level agreement with Automotive Industry Development Centre (AIDC) to be developed Rosslyn area in Region 1 into Tshwane Automotive City (TAC) over a period of 50 years and at an estimated investment of R500 billion. TAC will be comprised of the following nodal development - Industrial Node, Community and Civic Node, Commercial and Recreation Node and a Logistics and Inland Port Node. TAC will be the first automotive city globally to be comprised of more than one Original Equipment Manufacturers (OEMs).

It is planned that the recreational node will be comprised of hotels, Public Square, cafés, restaurants, museums, showrooms, waterfront development. The community and civic node will be comprised of neighbourhood node (Pharmacy, Café, Shop), mixed use town centre (Public square, Post Office, Restaurants, Clinic, Shops) and high density residential (Flats, Apartments) while commercial node will be comprised of offices, restaurants, business parks.

2. Establishment of a Municipal Entity for Investment Purposes

